3. WITHOUT-PROJECT CONDITIONS

Defining existing resource conditions and how these conditions might need to change in the future is one of the most important aspects of any water resources investigation. The magnitude of change influences the scope of the problems, needs, and opportunities, as well as the possible actions taken to address them. Identification of the magnitude of potential water resource problems and related problems and needs in the study area, is based on the existing conditions and how these conditions could change in the future. In addition, environmental impacts will be evaluated for state and federal environmental documents based on conditions with and without a NODOS project. State and federal environmental laws have somewhat different requirements related to without-project conditions and analysis of environmental impacts.

- NEPA requirements – For an EIS, impacts associated with a reasonable range of alternatives, including a no-action alternative, are evaluated for future conditions. Actions that can be reasonably expected to occur in the future are included in discussion and analyses, for development of the EIS. This often includes projects and actions that are currently authorized, funded, permitted, and/or highly likely to be implemented.
- CEQA requirements – For an EIR, the no-project alternative is to be evaluated, assuming "existing conditions" or conditions at the time the Notice of Preparation was issued. An EIR should also discuss future no-project conditions that are reasonably expected to occur.

The future conditions analysis associated with identifying and meeting problems, needs, and opportunities and environmental impact analysis will be based on similar assumptions. The future conditions are based mostly on extensions of existing conditions.

A reliable and realistic portrayal of future without-project conditions is essential to NODOS and the CALFED surface storage investigations in general. The uncertainty of the state's water resources future is demonstrated in the three "plausible" 2030 water demand scenarios described in the 2005 California Water Plan Update. These scenarios indicate a range of 2030 demands that vary by almost 4.5 MAF, depending significantly on variable assumptions related to implementation of the CALFED complementary actions. In this report, CALFED complementary actions consist of implementation of specific CALFED program elements including Water Use Efficiency (i.e., conservation and recycling) and Water Transfers.

As progress continues under CALFED's programmatic implementation guidance, the surface storage investigations seek to describe as clearly as possible implementation of these other essential CALFED program elements. The assumptions related to the future of each of these elements, or CALFED complementary actions, will affect first the future without-project conditions and then consequently, potential project benefits and impacts. These investigation assumptions indicate that these CALFED complementary actions will be implemented with or without NODOS implementation in this case.

The Bay-Delta Program envisioned all of the CALFED complementary actions would be implemented concurrently to achieve the breadth and depth of benefits identified within the CALFED solution area. The complementary nature of these CALFED actions is explicitly described in the ROD:

> *All aspects of the CALFED Program are interrelated and interdependent. Ecosystem restoration is dependent upon water supply and conservation. Water supply depends upon water use efficiency and consistency in regulation. Water quality depends upon*

> *improved conveyance, levee stability and healthy watersheds. The success of all of the elements depends upon expanded and more strategically managed storage.*

The ROD description of the Storage Program in the Preferred Program Alternative is also helpful, noting that, "groundwater and surface water storage can be used to improve water supply reliability, provide water for the environment at times when it is needed most, provide flows timed to maintain water quality, and protect levees through coordinated operation with existing flood control reservoirs." In addition, "storage will be developed and constructed, together with aggressive implementation of water conservation, recycling, an improved water transfer market, and habitat restoration, as appropriate to meet CALFED Program goals."

CALFED, Reclamation, and DWR ultimately initiated the Common Assumptions process to provide a reliable picture of California's water resources future that will significantly rely on implementation of all CALFED's complementary actions listed above. Common Assumptions is developing a comprehensive water resources future with quantitative estimates of CALFED complementary actions that reflects these CALFED program commitments. In addition, Common Assumptions is tracking implementation of non-CALFED water resources actions that may need to be integrated into the without-project future condition. A more detailed description of each CALFED complementary action is included in Section 3.2.7.

3.1 EXISTING CONDITIONS

Existing physical, biological, social and economic, land use, water supply, cultural, transportation, and recreation conditions are described in this section, focusing on the primary study area. Additional information on these existing conditions and those in the extended study area, including the Sacramento-San Joaquin Delta and the SWP and CVP service areas, will be contained in future documents for the NODOS Investigation.

3.1.1 Physical Environment

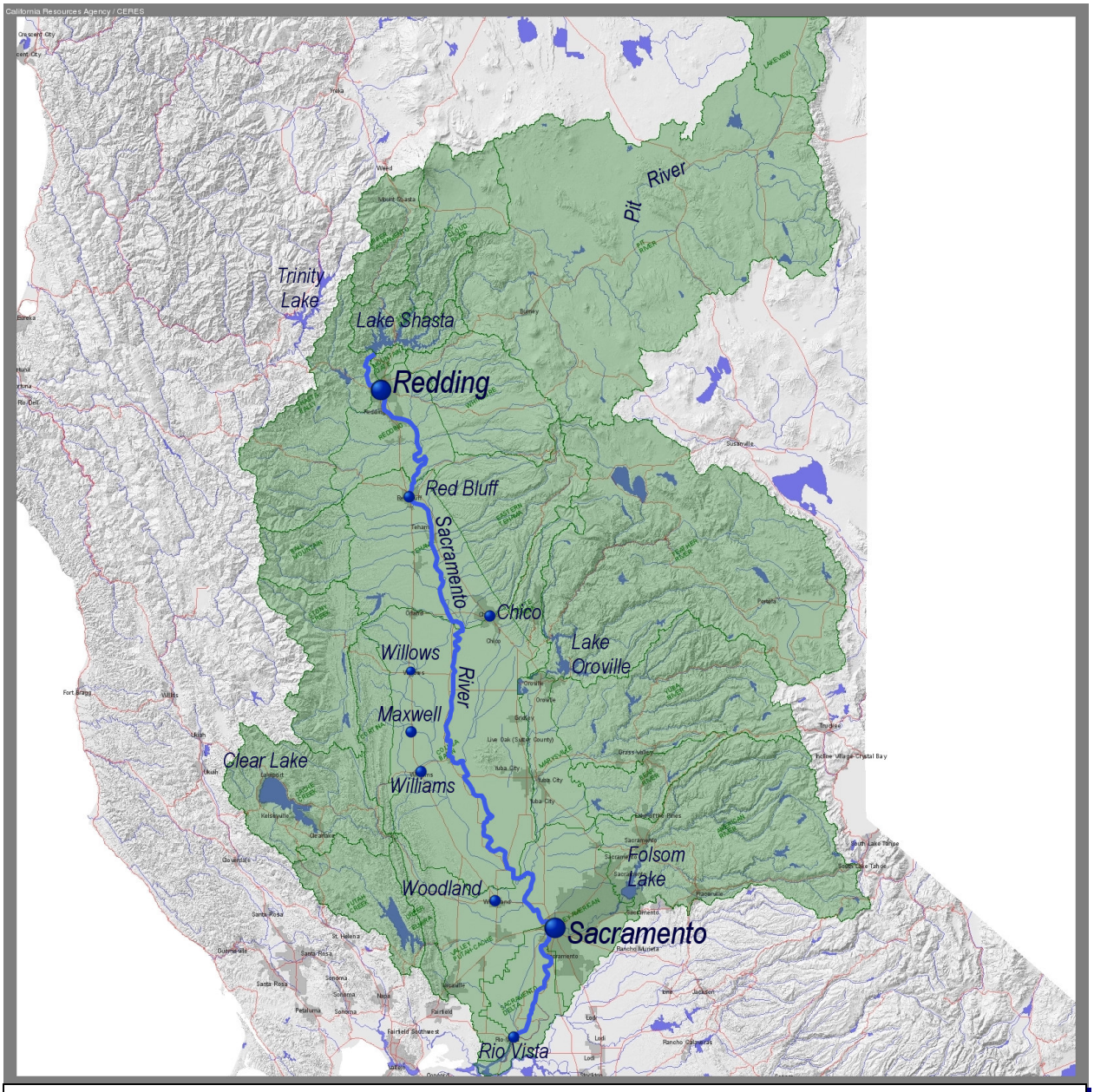
Alternative reservoir locations for the NODOS project are all within the Coast Range foothills along the western edge of the northern Sacramento Valley. Figure 3-1 illustrates the watersheds of the Sacramento River. Relevant watershed information associated with the river is also shown on the figure.

3.1.1.1 Topography

The physical topography of the watersheds draining the eastern side of the Coast Range toward the Sacramento Valley is diverse. The topography encompasses steep, rugged, mountainous terrain within the upper watersheds, rolling foothills in the proposed project areas, and relatively flat alluvial terrain as the watersheds enter the Sacramento Valley. Elevations range from less than 40 feet above sea level on the valley floor to over 8,000 feet along the Coast Range divide.

3.1.1.2 Climate

The climate of the watersheds draining into the western Sacramento Valley is typically Mediterranean (detailed descriptions are provided in Appendix A). Winters are rainy and relatively mild, with only occasional freezing temperatures at the lower elevations; summers are comparatively dry and hot. The rainy season normally begins in September and continues through March or April. Rains may continue for several days at a time, but are usually gentle. Summer rains are rare, as are thunderstorms and



Sacramento River Hydrologic Region Statistics

- Area – 27,246 square miles
- Average annual precipitation – 36.7 inches
- Year 2000 population – 2,593,110
- Year 2030 projected population – 4,569,490
- Total reservoir capacity – 16,146 thousand-acre feet
- Year 2000 irrigated agriculture – 2,037,900 acres

Figure 3-1. Sacramento River Watershed

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hailstorms. Thunderstorms occur about 10 days per year in the Sacramento Valley, occasionally producing high-intensity rainfall of short duration. Most precipitation is associated with migrant storms that move across the area during winter. Snow is the dominant form of precipitation above the 5,000-foot elevation and persists on northern- and eastern-facing slopes into the early summer.

Because the majority of precipitation falls in the winter months, many local streams are ephemeral with little or no flow from July through October. However, these streams tend to respond rapidly to significant rainfall events. Flash flooding with substantial overland flow has been observed. Flows recorded at the stream gage on Stone Corral Creek in the western Sacramento Valley are representative of the flow variability in these small ephemeral streams. Annual discharge varied from zero in 1972, 1976, and 1977 to 39,930 AF in 1963, and it averages 6,500 AF. Monthly flows in excess of 15,000 AF have been documented.

3.1.1.3 Geology and Soils

Rock underlying the NODOS primary study area is part of the Great Valley geomorphic province, which is mostly sandstone, mudstone, and conglomerate. The Great Valley geomorphic province is bounded to the west by the Coast Ranges province, to the north by the Klamath Mountains province, to the northeast by the Cascade Range province, and to the east by the Sierra Nevada province (Appendix B provides a detailed description of geology and soils).

The NODOS primary study area has very few groundwater resources. The area is underlain by the Great Valley Sequence rocks and locally by Quaternary terrace deposits. Groundwater is found in fractures in the Great Valley Sequence and in the sands and gravels in the terrace deposits. Springs occur where the terrace deposits terminate or where water-bearing fractures encounter the surface. Several springs also occur in the Great Valley Sequence rocks, where faults create subsurface dams that cause groundwater to reach the surface. Not all fractures or faults contain groundwater, nor do all terrace deposits have groundwater.

3.1.1.4 Air Quality

Air Pollution Control Districts have been established for Colusa, Glenn, and Tehama Counties. Each county monitors similar contaminants, including ozone and particulate matter. Detailed site-specific air quality information is not available. Colusa County is a non-attainment area for both particulates less than 10 microns in size (PM_{10}) and ozone, under state and federal criteria. Tehama County is considered a moderate non-attainment area for both ozone and PM_{10} under the California Clean Air Act; however, levels of both contaminants there are within federal criteria. Glenn County air quality meets both state and federal air quality standards for ozone and PM_{10}.

3.1.2 Biological Resources

The following subsections identify biological resources, such as vegetation, aquatic and fishery, and wildlife resources, within the study area.

3.1.2.1 Vegetation

The watersheds of Sacramento Valley west-side streams contain a variety of vegetative communities (botanical surveys are summarized in Appendix C). These include white fir, Klamath mixed conifer, Douglas fir, ponderosa pine, closed-cone pine-cypress, montane hard wood conifer, montane hardwood, blue oak woodland, valley oak woodland, blue oak foothill pine, montane riparian, valley foothill riparian, montane chaparral, mixed chaparral, chamise-redshank chaparral, annual grassland, and cropland.

Vegetation within the primary study area for NODOS is varied by the influence of local soils, geology, microclimate, hydrology, aspect, and elevation, as well as other physical and biological factors. Grassland habitat frequently occurs throughout the study area. This upland plant community of herbaceous annual grasses and herbs is characteristically composed of many non-native species and a limited number of native species. Species composition is highly variable among stands and throughout the growing season. Vernal pools and swales within the annual grassland community support unique assemblages of native wetland plant species.

Chaparral communities occur in varying amounts at or near each of the proposed project locations. These stands frequently occur in a continuous canopy with little or no understory. Other shrub and tree species, including poison oak and manzanita, form a mosaic in some chaparral stands.

Riparian vegetation is associated with both intermittent and permanent streams. Common riparian overstory species include Fremont's cottonwood, willow, and Mexican elderberry.

Two types of oak woodland were identified within the primary study area: valley oak woodland and blue oak woodland. Valley oak woodlands are found along the major tributaries and valley bottoms. This vegetative community may include other native tree and shrub species. Blue oak woodland occurs at or near each of the proposed projects. Blue oak is the dominant or sole canopy species in these woodlands. An annual grassland understory is common, and a shrub layer composed of manzanita and wedgeleaf ceanothus can occur. Blue oak woodlands occur primarily on moderately rocky to well-drained slopes. Limited amounts of wetlands occur within the areas suitable for new storage facilities.

3.1.2.2 Aquatic and Fishery Resources

The watersheds of the North Coast Range draining east toward the Sacramento Valley contain native and non-native species, warm-water and coldwater species, and anadromous and resident fish species. At least 24 species of fish are present in these watersheds. Several state or federally listed fish species occur in the region, including steelhead and various runs of Chinook salmon. Coldwater habitats are present in the upper watersheds of the major streams, including Cottonwood Creek and Beegum Gulch.

Several environmental surveys have been conducted in the primary study area to verify the existence of various species. Fishery evaluations have been performed at various tributaries to the Sacramento River, including Antelope, Stone Corral, Funks, Logan, Hunters, Minton, Thomes, Cottonwood, and Red Bank and the Colusa Basin Drain. Antelope, Stone Corral, Funks Logan, Hunters and Minton Creeks are all ephemeral streams and do not provide coldwater habitat, nor do these streams provide suitable rearing habitat for anadromous species.

Thomes Creek below Paskenta usually dries up except for a few residual pools scattered along the streambed during the late summer, making it impossible for resident adult fish to live there throughout the summer months. Some adult game fish such as largemouth bass and smallmouth bass, bluegill, and green sunfish ascend the creek from the Sacramento River during the late spring and early summer to use these pools as spawning areas. The Lower Thomes Creek watershed contained a diverse assemblage of fish species that included runs of fall-run, late fall-run and spring run Chinook salmon and steelhead.

Runs of fall-run, late fall-run, and spring-run Chinook salmon in lower Cottonwood Creek and spring-run Chinook salmon and steelhead in South Fork Cottonwood Creek have been identified.

Fall-run Chinook salmon ascend Cottonwood Creek and spawn in late October through November and spawn in from the mouth to the confluence of North Fork Cottonwood Creek. Late fall-run Chinook

salmon migrate up Cottonwood Creek and spawn in January. Spring-run Chinook salmon migrate up Cottonwood Creek in April and spend the summer in deep pools in South Fork Cottonwood Creek, Beegum Gulch, and North Fork Cottonwood Creek. Most are found in Beegum Gulch. Some young Chinook salmon from the Sacramento River use the lower reach of Cottonwood Creek from Interstate-5 to the mouth for rearing during the summer and fall.

Steelhead have been identified within the Red Bank Creek watershed.

The most significant findings of the studies were the presence of fall-run Chinook salmon, late fall-run Chinook salmon, spring-run Chinook salmon, and steelhead in Cottonwood Creek. The presence of steelhead in Red Bank Creek was also a significant finding.

Appendix D provides greater detail on fisheries survey results.

3.1.2.3 Wildlife

A wide variety of wildlife species use habitat within the primary study area either seasonally or year-round. Surveys are ongoing for the presence of state and federally listed species. However, substantially less information has been collected on non-listed species density and distribution.

State or federally listed wildlife species have been studied and documented. These include wintering bald eagles (state endangered, federal threatened), wintering sandhill cranes (state threatened), a migrating bank swallow (state threatened), and one red-legged frog (federal threatened). Numerous federal species of concern, California Species of Special Concern, federal Migratory Nongame Birds of Management Concern, or candidate species occur within the primary study area.

Several CDFG harvest species occur within the primary study area. Upland game includes black-tailed deer, black bear, feral pig, gray squirrel, wild turkey, California and mountain quail, and mourning dove. Waterfowl use is generally restricted to winter use of stock ponds, small lakes, and refuges, including the Sacramento National Wildlife Refuge Complex. Limited wood duck and mallard nesting also occurs within stock ponds and along the stream channels where adequate brooding water exists.

According to the California Natural Diversity Database maintained by CDFG, several federally listed invertebrate species may occur within the primary study area. These species include valley elderberry longhorn beetle, vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp (see Appendix D).

3.1.3 Socioeconomic Resources

Existing social and economic resources described in this section include population, employment, local government, and utilities and public services.

California's population is projected to increase from 36.5 million to about 48 million by 2030 and to nearly 55 million by 2050. The population of the Sacramento and San Joaquin River basins portions of the Central Valley is expected to increase from approximately 4.4 million people in 2000 to about 7 million people by 2020 and to 10 million in 2040. In the Sacramento River basin, the population is expected to increase from about 2.6 million to about 3.8 million by 2020 and to 5 million by 2040.

In California, counties, school districts, fire districts, water districts, and other special districts provide local government services. The local governmental units operating within the Sacramento River Valley had combined revenue of almost $8.8 billion, based on 1997 census data.

California has the largest and most diverse economy in the nation, with an annual gross state product of more than a trillion dollars, which represents 13.5% of the gross national product of the United States (State of California Commerce and Economic Development Program Web site). The state's economy is based on agriculture, mineral extraction, biotechnology, telecommunications, computer technology, electronic products, transportation equipment (particularly aerospace products), fabricated metal products and machinery, food processing, business services, and tourism. The economy of the central and northern counties of the Central Valley is based on lumbering, the manufacturing of wood products, farming, and food processing. The northern and central counties of the Central Valley have rates of unemployment varying from 4.1% (Solano County) to 17.6% (Colusa County).

Various departments within the cities and counties of the Sacramento River Valley provide fire protection, police protection, and emergency services to members of their communities. A vast network of utility generation/transmission systems and service providers exists across all regions of the study area, supplying urban and rural areas with power, water, and emergency services. Other significant infrastructure consists of hydroelectric and natural gas-fired generating facilities, transmission lines, substations, distribution lines, fiber optic and cable lines, and communication towers. Pipelines, storage areas, and compressor stations also are located in the Sacramento Valley.

3.1.4 Land Use

The watersheds draining the eastern slope of the Coast Range are subject to a variety of land use practices. Upper elevations are primarily commercial forest lands and managed for timber production, outdoor recreation, and grazing. Foothill areas are currently managed primarily for livestock grazing. Some foothill valleys support dryland grain or orchard production. Mineral extraction activities have occurred historically in various locations throughout foothill and mountain areas. Sacramento Valley portions of the watersheds support a wide variety of agricultural uses, including livestock grazing, irrigated grain and truck crops, and orchards.

3.1.5 Water Supply

As described in the California Water Plan Update 2005, a big challenge now and for the future is to assure that water is in the right places at the right times. Challenges will be greatest during dry years. Water dedicated to the environment is curtailed sharply in these years. Greater reliance on groundwater during dry years results in higher costs for many users. At the same time, water users who have already increased efficiency may find it more challenging to achieve additional water use reductions during droughts. As competition grows among water users, water management during dry years will become more complex and, at times, contentious.

From a statewide perspective, California meets most of its water management objectives in most years. Water conservation, recycling, and infrastructure improvements, such as storage and conveyance facilities, have helped to ensure most urban demands are met. Except in multiyear droughts, most urban areas have sufficient supplies for existing populations. Cities use about the same amount of applied water today as they did in the mid-1990s, but they accommodate 3.5 million more people. Water conservation and demand reduction strategies are expected to continue playing a prominent role in achieving future goals (DWR, 2006).

In addition, most agricultural water demands in the Sacramento Valley are met in average water years. Farmers have learned to grow more crops per acre-foot of applied water by improving productivity and efficiency. For example, from 1980 to 2000, the annual statewide harvest increased by 40% measured in tons of crops per acre-foot of applied water. However, in some areas, water sources once used for agriculture are now used for urban needs, environmental restoration, and groundwater replenishment. Even in average water years, some growers forego planting and other agricultural operations because they lack a firm water supply.

However, environmental requirements are not always met, though a considerable amount of water is dedicated to restoring ecosystems. Many flow regimes no longer resemble natural hydrographs, largely because of efforts to manage water storage and diversions to meet competing demands. Ecosystem needs and their response to flow, however, are not sufficiently understood, but significant scientific advancement is taking place. Improvements are being made with ecosystem needs integrated with water management and project operations.

Table 3-1, California Water Balance Summary, illustrates how water supply changes in below-average, above-average, and average years, as well as where the water is distributed.

California has not experienced the hardships and environmental pressures of a prolonged statewide drought since the early 1990s, but similar or worse conditions of unreliable water supplies will recur. During long or extreme droughts, water supplies are less reliable, heightening competition and at times leading to conflicts among water users. Water quality is degraded, making it difficult and costly to make it drinkable. Business and irrigated agriculture are adversely affected, jeopardizing California's economy. Ecosystems are strained, jeopardizing sensitive and endangered plants, animals, and habitats. Groundwater levels decline, and many rural residents who depend on small water systems or wells run short of water.

California's most severe recorded drought statewide occurred in 1976 and 1977. Two consecutive years with little precipitation (the fourth driest and the driest year in recorded history) left California with record low storage in its surface reservoirs and dangerously low groundwater levels. Socioeconomic and environmental impacts were very severe during these extreme drought conditions. The total loss from this drought exceeded $2.5 billion ($6.5 billion in today's dollars).

The most recent prolonged statewide drought lasted six years, from 1987 to 1992. During the drought's first five years, the groundwater extractions in San Joaquin Valley exceeded the recharge by 11 million AF, which caused increased land subsidence in some areas. DWR studies indicate that from 1990 to 1992, the drought resulted in reduced gross revenues of about $670 million to California agriculture. Energy utilities were forced to substitute hydroelectric power with more costly fossil-fuel generation at an estimated statewide cost of $500 million in 1991. The drought also adversely affected snow-related recreation businesses; some studies suggest a loss of about $85 million during the winter of 1990 to 1991.

Since the drought of 1987 to 1992, many notable changes, increases in water demands, changes in regulations, and improvements in conservation and infrastructure, have occurred that will alter the impacts of future droughts. In addition, the following factors will have an effect.

- California's population has increased to about 36.5 million people as of July 1, 2004.
- The SWRCB adopted Decision 1630 in 1995, which requires higher flows to protect the Delta.
- Completion of construction of the Coastal Aqueduct (DWR), Morongo basin pipelines (Mojave Water Agency), Diamond Valley Lake (Metropolitan Water District), Los Vaqueros Reservoir

(Contra Costa Water District), and five large-scale groundwater recharge/storage projects should add flexibility in operating the water system.

- Despite the increase in population, advances in water conservation and recycling, combined with infrastructure improvements, including new storage facilities, have helped meet most demands. Cities use about the same amount of applied water today as they did in the mid-1990s, but they accommodate 3.5 million more people.
- The Colorado River Quantification Settlement Agreement has been adopted, limiting Southern California's access to Colorado River water.

3.1.6 Cultural Resources

Several historic and prehistoric sites occur within the primary study area. Prehistoric settlement in the project area was constrained by the limited food and fuel resources and the scarcity of water. However, the area would have been important for seasonal hunting and gathering forays. The larger and more permanent villages were situated along the lower reaches of the bigger streams and on the knolls and natural levees along the Sacramento River.

Information on historic sites, features, and standing structures is incomplete at this time. Working ranches, occupied buildings, and towns have constrained the scope of investigations performed to date. There are known cemeteries within the primary study area that would have to be relocated if affected by a future project. As a result of some detailed, site-specific investigations, these focused cultural resources surveys have identified resources within the study area that require more detailed study in the future (see Appendix E).

3.1.7 Transportation

U.S. Interstate 5 provides the primary north-south corridor throughout the study area. Colusa County Road, Glenn County Roads 60 and 69, State Highway 162, and Tehama County Roads provide access to the west of Interstate 5. There are small airports in the cities of Willows, Red Bluff, and Orland, and a larger airport in Redding.

3.1.8 Recreation

Recreational activities within watersheds of the streams flowing through the project areas include hiking, hunting, fishing, camping, boating, mountain biking, and off-road vehicle use. Most of these activities occur primarily on public lands in the Mendocino National Forest and associated private timberlands. Little public access into the foothills private grazing lands occurs. However, public recreation areas are present within the foothills portion of the Stony Creek watershed at Black Butte Lake and Stony Gorge and East Park Reservoirs. Waterfowl and upland game bird hunting are the primary recreational use activities within the Sacramento Valley portions of these watersheds.

Recreational use and opportunity are currently very limited within the primary study area. Almost all lands are privately owned and posted against trespass, thus preventing general public access. Recreational activities that do occur are primarily by landowner families, their friends, and employees. Upland game birds (dove, quail, and pheasant); black-tailed deer; and feral pigs are the most commonly hunted species within the primary study area. Commercial hunting operations for feral pig, blacktailed deer, and wild turkey may operate on individual landholdings. Numerous stock ponds within the potential project areas are large enough to support bass, catfish, and sunfish. Angling pressure for these ponds appears to be generally low.

Table 3-1

California Water Balance Summary

(Source: DWR, 2006)

	State Summary (MAF)			Sacramento River (TAF)			San Joaquin River (TAF)		
	1998 (171%)[a]	2000 (97%)[a]	2001 (72%)[a]	1998 (168%)[a]	2000 (105%)[a]	2001 (67%)[a]	1998 (171%)[a]	2000 (97%)[a]	2001 (72%)[a]
Total supply (precipitation and imports)	336.9	194.7	145.5	90,351	58,217	36,564	40,727	28,497	20,010
Total uses, outflows, and evaporation	331.1	200.5	159.8	86,859	59,469	40,124	38,922	28,527	22,707
Net storage changes in state	**5.8**	**-5.8**	**-14.3**	**3,492**	**-1,252**	**-3,560**	**1,805**	**-30**	**-2,697**
Distribution of dedicated supply (includes reuse) to various applied water uses									
Urban uses	7.8 (8%)	8.9 (11%)	8.6 (13%)	727.3 (3%)	859.6 (4%)	877.2 (5%)	562.5 (5%)	594.0 (5%)	622.8 (6%)
Agricultural uses	27.3 (29%)	34.2 (41%)	33.7 (52%)	6,458.2 (27%)	8,713.9 (38%)	8,567.1 (45%)	5,458.1 (47%)	7,034.1 (57%)	7,154.2 (67%)
Environmental water[b]	59.4 (63%)	39.4 (48%)	22.5 (35%)	16,397.8 (70%)	13.487.6 (58%)	9,587.7 (50%)	5,604.5 (48%)	4,637.1 (38%)	2.930.1 (27%)
Total dedicated supply	**94.5**	**82.5**	**64.8**	**23,583.3**	**23,061.1**	**19,032.0**	**11,625.1**	**12,265.2**	**10,707.1**

maf = million acre-feet
taf = thousand acre-feet

[a] Percent of normal precipitation. Water year 1998 represents a wet water year; 2000 represents an average water year; 2001 presents a drier water year.

[b] Environmental water includes instream flows, wild and scenic flows, required Delta outflow, and managed wetlands water use. Some environmental water is reused by agricultural and urban water users.

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There are also recreational opportunities near the Red Bluff Diversion Dam on the Sacramento River. Red Bluff Reservoir is located 2 miles southeast of the city of Red Bluff. From May 16 through September 14, the operable gates of the Red Bluff Diversion Dam are closed forming the seasonal lake, Lake Red Bluff. This seasonal lake is approximately 3 miles long with approximately 200 surface acres. Lake Red Bluff provides a cold-water fishery for trout, steelhead, and salmon, and other recreational opportunities in the form of sailing, jet skiing, water skiing, and drag boat racing. Lake Red Bluff is home to the Nitro Nationals Drag Boat Festival.

3.2 FUTURE WITHOUT-PROJECT CONDITIONS

Identification of the magnitude of potential water resources and related problems and needs in the study area is based not only on the existing conditions described in this chapter, but also on an estimate of how these conditions may change in the future. The future without-project condition is a projection of the most reasonably foreseeable actions that will occur if no project is implemented over the life of the project. Future without-project conditions will be used to assess and discuss environmental effects in compliance with CEQA and NEPA.

3.2.1 Physical Environment

Basic physical conditions in the study area are expected to remain relatively unchanged in the future. No changes to area topography, geology, or soils are foreseen. From a geomorphic perspective, ongoing restoration efforts along rivers are expected to marginally improve natural riverine processes. Without major physical changes to the river systems, hydrologic conditions will probably remain unchanged. There is growing concern that the region's hydrology will be altered by global climate change. Scientific work in this field of study is continuing. The potential effects on California's hydrology and management of its water resources need to be evaluated. This investigation will integrate relevant information as new tools and analyses become available.

Much effort has been expended to control the levels and types of herbicides, fungicides, and pesticides that can be used in the environment. Efforts are under way to better manage the quality of runoff from urban environments to the major stream systems. However, water quality conditions are expected to remain generally unchanged and similar to existing conditions. Air pollutants in the study area will continue to be influenced by urban and agricultural land uses. As the population continues to grow, and agricultural lands are converted to urban centers, a general degradation of air quality conditions could occur.

With California's population projected growth to nearly 46 million by the year 2020, California's demand on groundwater will increase significantly. In many basins, the ability to use groundwater optimally will be affected by overdraft and water quality. Groundwater pumping will continue to increase in response to growing urban and agricultural demands. Over the long term, groundwater extraction cannot continually meet the portion of water demands that are not met by surface water supplies without causing negative impacts on the groundwater basin. Groundwater overdraft is the condition of a groundwater basin in which the amount of water withdrawn by pumping over the long term exceeds the amount of water that recharges the basin. Overdraft can lead to increased extraction costs, land subsidence, water quality degradation, and environmental impacts. It is estimated that overdraft is between 1 million and 2 million AF annually statewide, with most of the overdraft occurring in the Tulare Lake, San Joaquin River, and Central Coast hydrologic regions (DWR, 2003). A serious consequence of long-term groundwater overdraft is land subsidence, or a drop in the natural land surface. Land subsidence can result in a permanent loss of aquifer storage space and may cause damage to public facilities, such as canals, utilities, levees, pipelines, and roads.

3.2.2 Biological Environment

Significant efforts are under way by numerous agencies and groups to restore various biological conditions throughout the study area, including elements of the CALFED program, the Upper Sacramento River Conservation Area program, efforts by TNC and other private conservation groups, and numerous other programs and projects. Accordingly, major areas of Sacramento Valley wildlife habitat, including wetlands and riparian vegetation areas, are expected to be protected and restored. However, as population and urban growth continue and land is converted to urban uses, many wildlife species especially dependent on agricultural habitats, such as rice fields, may be impacted.

Implementation programs and projects in the Sacramento Valley to help restore fisheries resources also are being pursued. Although significant increases in anadromous and resident fish populations in the Sacramento River are likely to continue through the implementation of projects, such as the Battle Creek Restoration Project, these gains may be offset as a result of other actions, such as a reduction in Sacramento River flows, with elevated water temperatures, as a result of reduced diversions of cooler water from the Trinity River. Accordingly, populations of anadromous fish are expected to remain generally similar to existing conditions. In addition, significant efforts of federal and state wildlife agencies supporting populations of special-status species in the riverine and nearby areas will generally remain similar to those under existing conditions.

3.2.3 Socioeconomic Conditions

Based on 2000 population statistics, the population of California will increase 30% by 2020 and 70% by 2040, whereas the population of the Sacramento Valley will increase 45% by 2020 and 90% by 2040. California's population is estimated to increase from about 35 million in 2000 to nearly 60 million by 2040. The population of the Sacramento Valley is expected to increase from approximately 2.6 million people in 2000 to about 5 million in 2040. To support these expected increases in population, some conversion of agricultural and other rural land to urban uses is anticipated. The modification and expansion of existing traffic routes in the Central Valley also is anticipated in response to the growing population.

Anticipated increases in population growth in the Central Valley will result in increased demands on water resources systems for additional and reliable water supplies, energy supplies, water-oriented facilities, recreational facilities, and flood damage reduction facilities.

3.2.4 Energy and Power

Recent trends in electricity use are driven by economics and population growth, while average consumption per customer has not changed much. California electricity peak demand levels generally fluctuate with summer temperature variations. California faces several options in its efforts to ensure a balance between supply and demand. Traditionally, loads are served by generating facilities. However, because California's electric peak demand is almost completely caused by summertime air conditioning loads that show sharp peaks, reductions in demand due to demand responsiveness programs may be effective in balancing supply and demand. Substantial monetary, environmental and system performance benefits may result from using demand responsiveness to ensure California's electricity system remains reliable (California Energy Commission, 2002).

3.2.5 Cultural Resources

Any paleontological, historical, archeological, or ethnographic resources currently being affected by erosion associated with water-level fluctuations in Funks Reservoir and resource sites contiguous to streams or watercourses (within the NODOS Investigation study area) will continue to be affected. Fossils and artifacts located around the perimeter of the study area will continue to be subject to collection by recreationalists.

3.2.6 Recreation

Recreational activities within watersheds of the streams flowing through the project areas will remain relatively unchanged and will still include hiking, hunting, fishing, camping, boating, mountain biking, and off-road vehicle use. Recreation will continue to remain on public lands in the Mendocino National Forest and associated private timberlands and public recreation areas within the Stony Creek watershed.

Recreational use and opportunity will remain very limited within the primary study area because almost all the land is privately owned and posted against trespass.

There is potential for some loss of recreation near the Red Bluff Diversion Dam. To improve fish passage at the Red Bluff Diversion Dam, there may be action to reprogram the operable gates of the Dam with a different flow schedule.

3.2.7 CALFED Complementary Actions

The relationship between CALFED complementary actions and the surface storage investigations (including NODOS) is described in the CALFED ROD and the introduction to this section. These actions will complement any surface storage alternative considered in the planning process. The surface storage investigations assume that these actions will be implemented in a complementary manner to storage and are therefore incorporated into the Common Assumptions evaluation and the future without-project condition. New surface storage is not included in the future without-project condition. These complementary actions include the following.

- Water Use Efficiency – CALFED seeks to accelerate implementation of cost-effective actions of its WUE program to conserve and recycle water throughout the state. As with the EWA, it is believed that some form of this program will develop and continue into the long-term future.
- Water Transfers – CALFED seeks to stretch existing water supplies by promoting transfers from willing sellers to buyers. DWR, Reclamation, and SWRCB have signed an MOU and are implementing the CALFED Water Transfer Program.

3.2.8 Water Resources Infrastructure/Operations

Several significant projects are expected to be implemented in the future in and near the primary study area and are included in the analysis of meeting problems, needs, and opportunities as well as NEPA and CEQA impact analysis associated with future conditions (for consideration with or without the addition of a new storage facility north of the Delta). These projects include the following.

- Sacramento River National Wildlife Refuge – This is a land acquisition and habitat restoration program along the Sacramento River between Colusa and Ord Bend.

- Folsom Dam Modifications – Modifications consist of enlarging existing outlets, constructing new low-level outlets to increase releases during lower pool stages, and revising the surcharge storage space in the reservoir.
- Environmental Water Account – The EWA is a cooperative short-term management program to provide protection to fish of the Bay-Delta estuary through changes in the SWP/CVP operations with no uncompensated water costs to project water users. The program appears to be successful and is being evaluated as a long-term action.
- South Delta Improvements Program – DWR and Reclamation are the lead agencies for the SDIP. The SDIP objectives are to provide for more reliable long-term export capability by state and federal water projects, protect local diversions, and reduce impacts on San Joaquin River salmon. The SDIP includes construction of an operable gate at the head of Old River, construction of up to three operable gates in south Delta channels, and an increase in the permitted pumping capacity at Banks Pumping Plant from 6,680 cfs to 8,500 cfs during certain periods. Because the SDIP is still in the planning stage and has not been approved, it may or may not be included in the future without-project condition. The decision on whether to include SDIP in the future without-project condition will be made in the Plan Formulation phase. A draft EIS/EIR was released in November 2005.
- Trinity River Restoration Plan – The December 2000 ROD for the Trinity River Restoration Plan is being implemented. This includes reducing annual exports to the Sacramento River from 74% of Trinity River flows to 52 percent.
- Phase 8 Short-Term Agreement – It is highly likely that some of the 45 projects identified in the Phase 8 Short-Term Settlement Agreement will be implemented, including dedication of a portion of 185,000 AF of water for environmental needs. It is likely that the portion of the water not requiring construction of new infrastructure will be made available. The Phase 8 Short Term EIS/EIR is scheduled for release in Summer 2006.
- Operations Criteria and Plan (OCAP) – Numerous actions contained in the 2004 revision to the 1992 OCAP will be implemented to address how the CVP and SWP would be operated in the future, as several projects come on line and as water demands increase.
- Other Projects – Various other projects and programs are expected to be implemented in the future, including the Battle Creek Restoration Project, CVP contract renewals, Freeport Regional Water Project, and further implementation of the CVPIA (b) (2) water accounting.