Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft EIR/ Supplemental Draft EIS Executive Summary

ES.1 Introduction

ES.1.1 Background and Context

The Sacramento-San Joaquin Delta (the Delta) is a vitally important ecosystem that supports hundreds of aquatic and terrestrial species, many of which are threatened or endangered. Located at the crux of two major watersheds that capture runoff from approximately 40 percent of the land in California, the Delta is also at the core of the state's most important water system, which serves millions of Californians throughout the San Francisco Bay Area, the Central Valley, the Central Coast, and southern California. This water supports agricultural, municipal, and industrial land uses that, taken together, are the source of much of California's financial stability and prosperity. The benefitting areas include farms and ranches from the north Delta to the Mexican border, as well as Silicon Valley, portions of the East Bay, and most of urban southern California.

Unfortunately, the Delta is in a state of crisis. Several threatened and endangered fish species, including Delta smelt and winter-run Chinook salmon, have recently experienced the lowest population numbers in their recorded history. Meanwhile, Delta levees and the infrastructure they protect are at risk from earthquake damage, continuing land subsidence, and rising sea level. A major seismic event causing levee failure could cause an interruption of water exports for as long as several months or even years. And the amounts of water available for human use south of the Delta have already decreased significantly in recent years, independent of the drought, due to regulatory actions by the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW). Applying federal and state endangered species laws, these entities have required the Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation) to substantially alter the manner in which they jointly operate the State Water Project (SWP) and the federal Central Valley Project (CVP).

For both environmental and economic reasons, there is an urgent need to improve and modernize the existing SWP/CVP conveyance system, which was designed and built long before the "environmental era." Many of the current systemic problems stem from the fact that both the SWP and the CVP export water from intake facilities, including pumps, that are located at the far southern edge of the Delta, near the City of Tracy. Because of their far southerly location and their elevation above sea level, these pumps create "reverse flows" that pull river water southward (upstream, in effect) towards the intakes, rather than allowing it to flow downstream towards San Pablo Bay, San Francisco Bay, and, ultimately, the Pacific Ocean. Not surprisingly, these reverse flows cause, or contribute to, direct and indirect impacts on fish species such as Delta smelt, which are pulled towards the pumps, where adverse conditions, including the presence of predator species, await them. The reverse flows also adversely affect salmon migration patterns. To try to reduce these adverse effects on fisheries, regulators have substantially reduced water exports to SWP and CVP service areas, to the economic detriment of those areas. The recent historic drought has only made matters worse.

The ecological problems with the current system could be greatly reduced by the construction and use of new north Delta intake structures with state-of-the-art fish screens. With this future vision in mind, DWR and several state and federal water contractors, in coordination with Reclamation, have proposed a strategy for restoring ecological functions in the Delta while improving water supply reliability in California. These agencies' initial approach, going back as far as 2006, focused on the development of an extensive conservation plan known as the Bay Delta Conservation Plan, or BDCP, which would add new intakes in the north Delta while at the same time pursuing a very large-scale long-term habitat restoration program within the greater Delta. Under this potential approach, DWR would achieve compliance with the federal Endangered Species Act (ESA) through a habitat conservation plan (HCP) approved by both USFWS and NMFS under Section 10 of the ESA, and would achieve compliance with state endangered species laws through approval by CDFW of a natural community conservation plan (NCCP) prepared under the California Natural Community Conservation Plan Act (NCCPA). Both the HCP and NCCP would provide incidental take authorization for a period of 50 years. Reclamation would achieve compliance with ESA through Section 7 of that Act.

In December 2013, after several years of preparation, DWR, Reclamation, USFWS, and NMFS, acting as joint Lead Agencies, published a Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) on the proposed BDCP. This document contained a total of 15 action alternatives, including Alternative 4, which was identified as DWR's preferred alternative. The 14 other action alternatives varied from Alternative 4 with respect to factors such as the number of proposed North Delta intakes, the types of conveyance facilities (e.g., surface canals versus underground pipelines), operational rules, and amounts of proposed habitat restoration. Alternative 4 included three new intakes located in the North Delta and two parallel underground pipelines conveying diverted water to the existing export facilities in the South Delta. The proposed operations for Alternative 4 reflected many years of negotiations between DWR, Reclamation, the water contractors, USFWS, NMFS, and CDFW.

By July 2014, at the end of the public review period, the Lead Agencies had received numerous comments on the proposed BDCP from other agencies and members of the public. Many of these comments included concrete suggestions regarding how, from the commenters' perspectives, the project (i.e., Alternative 4, the BDCP) could be improved. For example, some people urged the Lead Agencies to reduce the level and scope of the construction activities, as well as the sheer size of the proposed facilities, as means of reducing air quality and noise impacts. Other commenters noted that Alternative 4 as then envisioned included substantial amounts of construction activity within Staten Island, which is prime habitat for the greater sandhill crane. Many commenters argued that, because the proposed project would lead to significant, unavoidable water quality effects, DWR could not obtain various approvals needed for the project to succeed (e.g., approval by the State Water Resources Control Board of new points of diversion for north Delta intakes). Yet others suggested that DWR should pursue a permit term shorter than 50 years due to the levels of uncertainty regarding both the future effects of climate change and the long-term effectiveness of habitat restoration in recovering fish populations. Still other comments suggested that the proposed conveyance facilities should be separated from the habitat restoration components of the BDCP, with the latter to be pursued separately.

Consistent with this public input, the Lead Agencies have substantially modified Alternative 4 to reduce its environmental impacts and have formulated new sub-alternatives that would seek incidental take authorization for a period of far less than 50 years, and would include only limited amounts of habitat restoration. The nature of the modifications to Alternative 4 are described at

length in Section 3.1 of this Partially Recirculated Draft EIR/Supplement to Draft EIS (RDEIR/SDEIS); and the Draft EIR/EIS text changes needed to reflect the modifications are shown in "track changes" in Appendix A of this RDEIR/SDEIS. Among the key changes are (i) the elimination of three pumping plants associated with new intake facilities; (ii) associated reductions in construction-related air pollutant emissions at intake sites; (iii) substantial reductions in the amount of construction occurring on Staten Island; (iv) reductions in water quality effects; and (v) the relocation of key project features from private property to public property already owned by DWR.

The three new sub-alternatives (4A, 2D, and 5A) developed by the Lead Agencies embody a different implementation strategy that would not involve a 50-year HCP/NCCP approved under ESA Section 10 and the NCCPA, but rather would achieve incidental take authorization under ESA Section 7 and California Endangered Species Act (CESA) Section 2081(b) assuming a shorter project implementation period. These new sub-alternatives address the reverse flow problem by focusing on the construction and operation of new north Delta intakes and on habitat restoration commensurate with the footprint of these new facilities. This alternative implementation strategy would allow for other state and federal programs to address more extensive long-term habitat restoration efforts for species recovery in programs separate from the proposed project.

The construction and operation of new conveyance facilities, as now proposed under Alternatives 4A, 2D, and 5A, would help resolve many of the concerns with the current south Delta conveyance system while otherwise helping to reduce threats to endangered and threatened species in the Delta through limited but substantial amounts of habitat restoration, as necessary to mitigate significant environmental effects and satisfy applicable ESA and CESA standards. Implementing a dual conveyance system, in which water could be diverted from either the north or the south or both, depending on the needs of aquatic organisms, would align water operations to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with state-of-the-art fish screens. The new system would reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish. Minimizing south Delta pumping would provide more natural east–west flow patterns. The new diversions would also help protect critical water supplies against the threats of sea level rise and earthquakes.

Although Alternatives 4A, 2D, and 5A include only those habitat restoration measures needed to provide mitigation for specific regulatory compliance purposes, habitat restoration is still recognized as a critical component of the state's long-term plans for the Delta. Such larger endeavors, however, will likely be implemented over time under actions separate and apart from these alternatives. The primary parallel habitat restoration program is called California EcoRestore (EcoRestore), which will be overseen by the California Resources Agency and implemented under the California Water Action Plan. Under EcoRestore, the state will pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020. These habitat restoration actions will be implemented faster and more reliably by separating them from the water conveyance facility implementation.

Alternative 4A is also known as "The California WaterFix." It is now DWR's preferred alternative under the California Environmental Quality Act (CEQA) and Reclamation's preferred alternative under the National Environmental Policy Act (NEPA).

ES.1.2 Overview of Key Revisions

This RDEIR/SDEIS has been prepared to provide the public and interested agencies an opportunity to review and comment on revisions and additional information added to the Draft EIR/EIS that was circulated for public review on Dec 13, 2013. Key revisions are listed below.

- Modified project objectives and purpose and need that encompass new alternatives as well as the original alternatives included in the Draft EIR/EIS.
- Engineering refinements made to the Alternative 4 water conveyance facilities, including changes to North Delta Diversion intake facility design; conveyance facility modifications to reduce environmental and property impacts; relocation of pumping plants to a new facility adjacent to Clifton Court Forebay; revisions to proposed conveyance facility operations; and changes to the proposed conservation strategy. These refinements would, among other things, reduce the effects of Alternative 4 on greater sandhill cranes and reduce the extent of construction activities that generate air pollution at intake sites.
- New sub-alternatives, Alternatives 4A, 2D, and 5A, are included to ensure a reasonable range of alternatives are considered that adopt the alternative implementation strategy to achieve federal and state endangered species act compliance using a shorter project implementation period through the "Section 7" process under the federal ESA, and the "Section 2081(b)" process under CESA.
- Updated environmental analysis that addresses certain issues raised in the more than 12,000 comments received on the Draft EIR/EIS. One example of such updated analysis is an updated discussion of Water Quality effects, which have been reduced compared with how they were described in the Draft EIR/EIS.

ES.1.2.1 Legal Basis for Recirculation

In accordance with Public Resources Code (PRC) Section 21092.1 and State CEQA Guidelines Section 15088.5, a CEQA lead agency must "recirculate" a revised Draft EIR or chapters or portions of the revised Draft EIR for additional comments if, after the start of public review but prior to final EIR certification, the lead agency adds "significant new information" to an EIR. Under NEPA, a supplement to the draft EIS may be prepared "when the agency determines that the purposes of NEPA would be furthered by doing so" (40 CFR 1502.9[c][2]) or if 1) the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or 2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9[c][1]).

ES.1.2.2 Modified Project Objectives and Purpose and Need

One of the primary challenges facing California is how to comprehensively address the increasingly significant conflict between the ecological needs of a range of at-risk Delta species and natural communities that have been, and continue to be, affected by human activities, while providing more reliable water supplies for people, communities, agriculture, and industry. This challenge must be addressed in decisions by DWR, the CDFW, and the State Water Resources Control Board as they endeavor to strike a reasonable balance between these competing public policy objectives and various actions taken within the Delta, including this proposed project. State policy regarding the Delta is summarized in the Sacramento–San Joaquin Delta Reform Act of 2009, which states:

> *"it is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta, and to establish a governance structure that will direct efforts across state agencies to develop a legally enforceable Delta Plan." (California Water Code, Section 85001, subd. [c]).*

> *The Delta "serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America." (California Water Code, Section 85002).*

The ecological health of the Delta continues to be at risk, the conflicts between species protection and Delta water exports have become more pronounced, as amply evidenced by the continuing court decisions regarding the intersection of ESA, CESA, and the operations criteria of the SWP and the CVP. Other factors, such as the continuing subsidence of lands within the Delta, increasing seismic risks and levee failures, and sea level rise associated with climate change, serve to further exacerbate these conflicts. Simply put, the overall system as it is currently designed and operated does not appear to be sustainable from an environmental perspective, and so the proposal to implement a fundamental, systemic change to the current system is necessary. This change is necessary if California is to "[a]chieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem." (California Public Resources Code Section 29702, subd. [a]).

A statement of Project Objectives by the Lead Agencies is required by the State CEQA Guidelines, and a Purpose and Need Statement is required by the CEQ NEPA Regulations.

ES.1.2.2.1 Project Objectives

DWR's fundamental purpose in proposing the proposed project is to make physical and operational improvements to the SWP/CVP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. The fundamental purpose is informed by past efforts taken within the Delta and the watersheds of the Sacramento and San Joaquin Rivers. The fundamental purpose, in turn, gives rise to the following project objectives.

- Address adverse effects to state and federally listed species related to:
  - The operation of existing SWP Delta facilities and construction and operation of facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta;
  - The implementation of actions to improve SWP and/or CVP conveyance that have the potential to result in take of species that are listed under the ESA and CESA.
- Improve the ecosystem of the Delta by reducing the adverse effects to certain listed species of diverting water by siting additional intakes of the SWP and coordinated operations with the CVP;
- Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

Additional Project Objectives that guide the development of the proposed project and alternatives can be found in Section 1.1.4.1 of this RDEIR/SDEIS.

ES.1.2.2.2 Purpose and Need

NEPA requires that an EIS include a statement of "purpose and need" to which the federal agency is responding in proposing the alternatives, including the proposed action. This purpose statement and project need described below are consistent with the Project Objectives outlined above in Section ES.1.2.2.1.

The purposes of the proposed action are to achieve the following.

1. Construction and operation of facilities and/or improvements for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
2. Operation of the existing and potential new SWP facilities and existing CVP Delta facilities.
3. The activities described in 1) and 2) occurring in a manner that minimizes or avoids adverse effects to listed species, and allows for the protection, restoration and enhancement of aquatic, riparian and associated terrestrial natural communities and ecosystems.
4. Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts held by SWP contractors and certain members of San Luis Delta Mendota Water Authority, and other existing applicable agreements.

The above Purpose statement reflects the intent to advance the coequal goals set forth in the Sacramento–San Joaquin Delta Reform Act of 2009 of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The above phrase—*restore and protect the ability of the SWP and CVP to deliver up to full contract amounts*—is related to the upper limit of legal CVP and SWP contractual water amounts and delineates an upper bound for development of EIR/EIS alternatives, not a target. It is not intended to imply that increased quantities of water will be delivered under the proposed project. As indicated by the "up to full contract amounts" phrase, alternatives need not be capable of delivering full contract amounts on average in order to meet the project purposes. Alternatives that depict design capacities or operational parameters that would result in deliveries of less than full contract amounts are consistent with this purpose.

ES.1.2.2.3 Project Need

The need for the action is derived from the multiple, and sometimes conflicting, challenges currently faced within the Delta. The Delta has long been an important resource for California, providing municipal, industrial, agricultural and recreational uses, fish and wildlife habitat, and water supply for large portions of the state. However, by several key criteria, the Delta is now widely perceived to be in crisis. There is an urgent need to improve the conditions for threatened and endangered fish species within the Delta. Improvements to the conveyance system are needed to respond to increased demands upon and risks to water supply reliability, water quality, and the aquatic ecosystem.

To further compound these challenges, fundamental changes to the Delta are certain to occur; the Delta is not a static ecological system. The anticipated effects of climate change will result in elevated sea levels, altered hydrological cycles, changed salinity and water temperatures in and around the Delta, and accelerated shifts in species composition and distribution. These changes add to the difficulty of resolving the conflicts in the Delta. Anticipating, preparing for, and adapting to these changes are key underlying drivers for the proposed project.

ES.1.2.3 Refinements to Alternative 4

Among the purposes of this RDEIR/SDEIS, in addition to introducing Alternatives 4A, 2D, and 5A, are to present revisions to Alternative 4 related to water quality, air quality, and impacts on fish species, and to provide updated analysis on actions to reduce effects of the 2013 Draft EIR/EIS preferred CEQA alternative. In December of 2014, the Lead Agencies publicly announced several design modifications to Alternative 4 to reduce impacts to Delta communities, minimize disturbances or dislocation to greater sandhill cranes, and improve the long-term reliability and operation of the conveyance facilities. Modifications to Alternative 4 include re-design of the north Delta diversions intakes, relocation of pumping plants consolidated at Clifton Court forebay, and removal of transmission lines and reusable tunnel material in sensitive areas, among other changes to the conveyance alignment. Please refer to Section ES.2, *Description of Alternatives*, below for a summary of Alternative 4 modifications and Section 3, *Conveyance Facility Modifications to Alternative 4* of this RDEIR, for a more detailed description of Alternative 4.

Although Alternative 4A is proposed as the new preferred alternative in this RDEIR/SDEIS, Alternative 4 remains an important option for consideration by the Lead Agencies. Alternative 4A includes all of the conveyance components of Alternative 4 and was formulated as an outgrowth of Alternative 4 in response to input from other agencies and members of the public. Alternative 4 remains a potentially viable alternative and is being carried forward in this RDEIR/SDEIS because it represents the original habitat conservation plan/natural community conservation plan (HCP/NCCP) alternative approach, and because it provides an important reference point from which the Alternative 4A, 2D, and 5A descriptions and analyses were developed. The current version of Alternative 4 includes substantial refinements (as indicated above) and reflects additional scientific work and analysis completed since release of the 2013 Draft EIR/EIS that are also carried forward to the new alternatives. For example, all of the new alternatives include the same refinements made for Alternative 4 related to the north Delta diversion intake facilities design, and all of the alternatives include the same conveyance facility alignments as presented for Alternative 4.

ES.1.2.4 Introduction of New Sub-Alternatives

On April 30, 2015, the Lead Agencies publicly announced a proposed modified sub-alternative, Alternative 4A, as the new proposed action, replacing Alternative 4 (the proposed BDCP). During the 2013–2014 public comment period, commenters expressed concerns about the potential impacts of large-scale habitat restoration on the Delta economy and community character. Other comments articulated concerns about the expected effectiveness of certain habitat restoration measures, the nature and uncertainty of climate change, and the related level of scientific uncertainty about future conditions and the efficacy of a 50-year permit.

The primary differences between Alternatives 4A, 2D, and 5A and Alternative 4 include:

- Alternatives 4A, 2D, and 5A would not serve as habitat conservation plans/natural community conservation plans under ESA section 10 and the Natural Community Conservation Planning

Act, but would achieve incidental take authorization under ESA Section 7 and CESA Section 2081(b). DWR would not seek 50-year permits.

- The originally proposed BDCP habitat restoration and other conservation measures (CM) (i.e., CM2 through CM21) would not be included in Alternative 4A, 2D, and 5A, except to mitigate significant environmental effects under CEQA/NEPA and to meet the regulatory standards of ESA Section 7 and CESA Section 2081(b).
- BDCP CM2, which would consist of proposed Yolo bypass improvements and approximately 8,000 acres of tidal habitat restoration, is not included in the new sub-alternatives; instead, these components of CM2 are assumed to occur independently of the sub-alternatives in a revised No Action Alternative.

Alternatives 2D and 5A are presented in addition to Alternative 4A to provide reviewers and decision-makers with a reasonable range of alternatives by which to compare and evaluate the proposed action. Alternatives 2D and 5A propose the same modified regulatory approach as the proposed Alternative 4A.

Although Alternatives 4A, 2D, and 5A comprise only the conveyance facilities and operations that formerly constituted CM1 under BDCP alternatives, and no longer include habitat restoration measures beyond what is needed to provide full mitigation under CEQA and NEPA, habitat restoration is still recognized as a critical component of the state's long-term plans for the Delta. Habitat restoration in the Delta beyond these alternatives' mitigation requirements will occur separately through implementation of California EcoRestore, and these activities will be further developed and evaluated independent of the water conveyance facilities.

ES.1.2.5 Updated Environmental Analysis

Substantive revisions to the Draft EIR/EIS related to the changes noted above, as well as other changes, have been made to RDEIR/SDEIS sections listed below; and these analyses have been applied to all of the impacts analysis for Alternative 4 (in Appendix A) and Alternatives 4A, 2D, and 5A in Section 4.

- Section 2.1, Improved Fish and Aquatic Habitat Analyses
- Section 2.2, Water Quality Revisions
- Section 2.3, Air Quality and Health Risk Assessment
- Section 2.4, Revised Project Description and Enhanced Level of Detail
- Section 2.5, Analysis of Geotechnical Investigations
- Section 5, Revisions to Cumulative Impact Analyses

The RDEIR/SDEIS describes, evaluates, and discloses the potential temporary and permanent direct and reasonably foreseeable indirect impacts to the human and natural environment associated with the proposed actions (Alternative 4A), the changes to Alternative 4, as well as Alternatives 2D and 5A, and the No Action Alternative. The RDEIR/SDEIS also identifies environmental commitments, avoidance and minimization measures, and mitigation measures to reduce or avoid effects. As was the case in the Draft EIR/EIS, Alternative 4 is evaluated at the Late-Long-Term (LLT) timeframe because it would include 50-year incidental take permits. The other alternatives evaluated in the RDEIR/SDEIS, Alternative 4A, 2D, and 5A, are evaluated at the Early Long-Term (ELT) timeframe because the project implementation period is anticipated to be shorter. For NEPA impact

assessment purposes, Alternatives 4A, 2D, and 5A are compared to the No Action Alternative for the Early Long-Term timeframe. Where impacts differ at the Late Long-Term (LLT) period, discussions of these effects were included in the analysis. For CEQA impact assessment purposes, they are compared against Existing Conditions, as generally described in the Draft EIR/EIS. More information about the No Action Alternative ELT is provided in Section 4.2, *Impact of No Action Alternative Early Long-Term*.

ES.1.2.6 Lead Agencies

As a result of changes to the proposed project and the modified regulatory approach for gaining necessary permits, the U.S. Bureau of Reclamation is now acting as the sole federal Lead Agency implementing NEPA. The USFWS and NMFS are now acting as NEPA Cooperating Agencies. The California Department of Water Resources is continuing to act as the state Lead Agency implementing CEQA.

ES.1.3 Areas of Known Controversy

As noted above, the Lead Agencies have prepared the RDEIR/SDEIS to provide the public and interested agencies with updated environmental analysis, to introduce new sub-alternatives, and to address certain issues raised in comments received on the Draft EIR/EIS. Many of these comments helped identify ways in which the BDCP and Draft EIR/EIS could be improved or alternative implementation strategies could be proposed to increase benefits and reduce environmental effects. All of the comments were considered in the decision to circulate the RDEIR/SDEIS.

NEPA and CEQA require that the lead agencies identify areas of known controversy and issues to be resolved that have been raised during the scoping process, public review periods, and throughout the development of alternatives in the EIR/EIS. Based on input from agency representatives and the general public during public scoping and the 2013–2014 comment period, the following issue areas of particular concern have been identified.

- **Range of Alternatives.** The range and adequacy of alternatives is an issue of concern to the public as well as to governmental agencies. In response, the RDEIR/SDEIS proposes three new sub-alternatives.
- **Biological Resources.** The complexity of the BDCP (Alternative 4) raises many concerns over environmental consequences for the aquatic ecosystem and fish species, and for the terrestrial ecosystem and plant and wildlife species. Separating the water conveyance plan from the HCP/NCCP and accelerating environmental restoration through EcoRestore may alleviate some of these concerns.
- **Biological Goals and Objectives.** Controversy exists over the potential conflict between conservation goals and the reasonable use of natural resources and lands for economic development. This issue is somewhat reduced under the new sub-alternatives 4A, 2D, and 5A because of the revised approach to limit habitat improvements to those that would offset conveyance facility effects.
- **Climate Change.** The likely effects of climate changes on water supplies and the Delta ecosystem during the 50-year life of the BDCP prompted many comments during the formal public review process. Comments reflected widespread concerns that the anticipated effects of climate and habitat restoration are too speculative and that there is too much uncertainty about such effects to allow for a 50-year permit period. These comments are among the reasons the

Lead Agencies introduced Alternatives 4A, 2D, and 5A, which do not include a HCP/NCCP and do not seek 50-year incidental take permits.

- **Water Supply, Surface Water Resources, and Water Quality.** Water supply and surface water resources—key drivers for development of the proposed project and its alternatives—remain highly controversial issues for a wide array of stakeholders (e.g., agricultural interests, hunting and fishing interests, water agencies, local jurisdictions) because of the changes in water operations, surface water flow conditions, and diversions that could result from changes to the SWP and CVP systems. Water quality is an issue of concern because of uncertainties regarding activities associated with conveyance facilities and restored habitat that could lead to discharge of sediment, possible changes in salinity patterns, and water quality changes that could result from modifications to existing flow regimes. This RDEIR/SDEIS in Section 4 addresses all of these water supply, surface water and water quality issues.
- **Agricultural Resources.** Because the Plan Area identified for the BDCP (Alternative 4) is largely devoted to agricultural uses, the effects of the BDCP on existing agricultural activities constitute an issue of known controversy. Although Alternatives 4A, 2D, and 5A would require much less conversion of agricultural land to restored or protected habitat than the alternatives that include a HCP/NCCP, agricultural land will still be affected by implementing any of the alternatives.
- **Socioeconomics.** The key socioeconomic concerns involve the impacts of construction activities, the potential losses of business revenues and employment associated with the decrease in agricultural production, and the potential decrease in tax revenues due to such a decline in agricultural activities. Alternative 4 would continue to have these effects while Alternatives 4A, 2D, and 5A would have lesser socioeconomic effects associated with agricultural land conversions compared with other BDCP alternatives.
- **Recreation.** Concerns relating to recreation include potential conflicts between construction and operation of facilities associated with the BDCP (Alternative 4) and ongoing Delta recreational activities (e.g., boating, fishing, hunting, enjoyment of marinas). In addition, there are concerns about possible conflicts between operable barriers and gates in Delta waterways and recreational boating corridors.
- **Aesthetics/Visual Resources.** Potential effects on aesthetics/visual resources are controversial to Plan Area residents. While aesthetic impacts are difficult to quantify, such impacts would be reduced by proposed changes to the conveyance facilities that would be constructed under Alternatives 4, 4A, 2D, and 5A.
- **Growth.** One of the proposed project objectives is to increase water supply reliability to SWP and CVP contractors south of the Delta. Increasing the reliability of water may allow additional growth south of the Delta or in export service areas. Concerns regarding the growth-inducing consequences of the proposed project or its alternatives generally focus on the potential effects of increased water supply to the southern part of the state.
- **Community Issues.** Community issues, such as construction noise, air quality, and traffic circulation effects; conversion of existing land uses; and access to private lands have been controversial topics. Plans by DWR to conduct geotechnical drilling surveys were opposed by the local Farm Bureaus because of concerns over confidentiality of the survey results, and the eminent domain process is currently underway to allow acquisition of temporary entry rights on private land for survey work.

ES.1.4 Readers Guide to the RDEIR/SDEIS

This Executive Summary provides an overview of the substantive changes made to the Draft EIR/EIS, as mentioned above, and a brief summary of the analysis of the impacts of those changes, as well as a guide for reviewing the RDEIR/SDEIS. As an augmentation to the Draft EIR/EIS, the RDEIR/SDEIS is intended to meet the requirements of CEQA and NEPA, to provide sufficient analysis to support decision making, and to inform permit decisions for the issuance of incidental take permits.

The RDEIR/SDEIS presents new information and addresses project revisions in several complementary ways. The main body of the document is organized into *Sections* rather than *Chapters.* This terminology is intended to distinguish references to existing chapters in the Draft EIR/EIS from references to new sections in the RDEIR/SDEIS that may address issues similar to those presented in the Draft EIR/EIS. In many instances, new information and project changes are addressed in stand-alone essays. Each essay discusses a discrete topic that has received substantive comment. These stand-alone essays are intended to make this document as user friendly as possible, and to avoid reprinting thousands of pages on which minor modifications might have been made.

The topical essays in Section 2 of the RDEIR/SDEIS are listed below.

- Section 2.1, *Improved Fish and Aquatic Habitat Analyses*, summarizes revisions made to chapter 11, *Fish and Aquatic Resources* of the Draft EIR/EIS.
- Section 2.2, *Water Quality Revisions*, describes additional analyses undertaken to more accurately characterize the potential for exceedances of water quality standards and summarizes associated revisions.
- Section 2.3, *Air Quality, Health Risk Assessment, Transportation, and Noise Revisions*, presents revised emissions calculations based on improved construction assumptions and updates the health risk assessment, traffic, and noise analyses to reflect improved construction data.
- Section 2.4, *Revised Project Description and Enhanced Level of Detail*, presents additional revisions that explain how, for the purposes of CEQA and NEPA, project-level detail is included for water conveyance facilities and provides additional information about early implementation actions, including examples of habitat restoration and enhancement activities.
- Section 2.5, *Analysis of Geotechnical Investigations*, provides an explanation about the method for incorporating analyses of geotechnical investigations into the analysis of the water conveyance facilities construction

In cases where the essay format was not appropriate, or where actual text changes were necessary to complement particular essays, the RDEIR/SDEIS includes modified excerpts of text that originally appeared in the Draft EIR/EIS, with underlining showing new language and strikeout showing eliminated text. These underline/strikeout revisions are referenced in the main text of the RDEIR/SDEIS as Appendix A, *Revisions to the Draft EIR/EIS*, which contains the actual text revisions. Appendix A does not include Draft EIR/EIS text that was not changed or that may be modified in the Final EIR/EIR in a non-substantive manner, and is focused primarily on impact analysis revisions to Alternative 4, though other BDCP alternatives are addressed for some of the resources for various reasons. To give readers the best possible sense of the context in which such text changes occur, Appendix A includes section headings before and after modified passages, so that readers can understand precisely where within Draft EIR/EIS chapters the revisions occur. Table 1-2 in Section

1, *Introduction*, provides an overview of the Draft EIR/EIS chapters in which substantive changes have been made in this RDEIR/SDEIS and identifies the topics that are addressed in each chapter as shown in Appendix A. For a visual representation of how the document is laid out and how various segments relate to one another, please see the *Document Review Road Map*.

ES.1.4.1 Alternative 4 Revisions

Section 3, *Alternative 4: Conveyance Facility Modifications*, provides an overview of the optimized design of water conveyance facilities associated with Alternative 4, and a summary discussion of the impacts and other associated text revisions made in each affected resource chapter. The resource summaries refer the reader to Appendix A of the RDEIR/SDEIS for detailed revisions made to the Draft EIR/EIS text. Topics include surface water, groundwater, water quality, geology and seismicity, soils, fish and aquatic resources, terrestrial biological resources, land use, agricultural resources, recreation, socioeconomics, aesthetics and visual resources, cultural resources, transportation, public services and utilities, energy, air quality, noise, hazards and hazardous materials, public health, minerals, and paleontological resources.

ES.1.4.2 Alternative 4A, 2D, and 5A Analyses

Description and analysis of new sub-alternatives are presented in Section 4, *New Alternatives: Alternatives 4A, 2D, and 5A*. Analyses presented in this section address impacts for all the resource topics considered in the Draft EIR/EIS. Impacts for which substantive changes have been identified are presented in full impact format with CEQA conclusions and NEPA effects and proposed mitigation measures where they are feasible and required to reduce a significant impact. Impact analyses also include revisions made to the No Action Alternative ELT for the purpose of providing a logical point of comparison for the NEPA analysis of Alternatives 4A, 2D, and 5A.

ES.1.4.3 Cumulative Impact Analyses

Section 5 of this RDEIR/SDEIS addresses revisions to the cumulative impacts analyses. In response to comments, and in light of new information, this RDEIR/SDEIS includes additional reasonably foreseeable proposed projects that, when considered together with the action alternatives, could have a significant cumulative effect. The analysis includes a discussion of the California Water Action Plan, California EcoRestore, and the Sustainable Groundwater Management Act to better describe the roles of the new Delta conveyance facilities and habitat restoration in the context of the state's comprehensive vision for water management.

ES.1.4.4 Supplemental Appendices

Additional components of this RDEIR/SDEIS include multiple appendices, in addition to Appendix A described above, that provide new or updated data used in the revised analyses.

- Appendix B, *Supplemental Modeling Results for New Alternatives*, provides additional CALSIM II, DSM2, and other modeling results referenced for Alternative 4A, 2D, and 5A operations impacts.
- Appendix C, *Supplemental Modeling Results Requested by the State Water Resources Control Board Related to Increased Delta Outflows*, provides supplemental modeling for use in the State Water Board permit process.
- Appendix D, *Substantive BDCP Revisions*, provides the changes that were made to the BDCP after the circulation of the Draft BDCP and Draft EIR/EIS and that are referenced in the RDEIR/SDEIS.

- Appendix E,*Supplemental Information for U.S. Army Corps of Engineers Permitting Requirements*, provides additional information needed for Corps wetland, navigation, levee modification, and cultural resources permitting processes.
- Appendix F, *Supplemental Modeling Results at ELT for Alternative 4*, provides supplemental CALSIM II and DSM2 results for Alternative 4 at the early-long-term that describe H1 and H2 operations scenarios.
- Appendix G, *Alternative 4A (Proposed Project) Compatibility with the Delta Plan*, provides an approach that may be considered for Alternative 4A to meet the Delta Plan consistency requirements.

All components of this RDEIR/SDEIS should be considered complementary to, and should be read and reviewed as supplemental elements of, the December 2013 Bay Delta Conservation Plan Draft Environmental Impact Report/Environmental Impact Statement. The Final EIR/EIS will include the entire presentation of all text changes made to the Draft EIR/EIS.

ES.1.5 Key RDEIR/SDEIS Terms

Due to the changes to the proposed project, there are several key terms that readers should be aware of when reviewing this RDEIR/SDEIS.

- **Plan Area and Study Area.** The terms Plan Area and Study Area are still applied to the impact analysis of Alternatives 4A, 2D, and 5A and all associated figures, tables, etc., since the activities pursued under these alternatives would take place in the same geographical area as the Plan Area; and the potential impacts would still occur in what was defined as the Study Area in the Draft EIR/EIS.
- **Conservation Measures and Environmental Commitments**. Because Alternatives 4A, 2D, and 5A do not include components of a HCP/NCCP, these alternatives do not include Conservation Measures (which are specifically required under Section 10 of the Federal ESA). Rather, limited elements of the previously proposed Conservation Measures are included as "Environmental Commitments" under Alternative 4A to mitigate significant environmental effects under CEQA and meet the regulatory standards of ESA Section 7 and CESA Section 2081(b). To aid reviewers, the Environmental Commitments are numbered to parallel the BDCP (Alternative 4) Conservation Measures, as shown in the examples below.

Alternative 4A	Environmental Commitment 3	Natural Communities Protection and Restoration
Alternative 4	Conservation Measure 3	Natural Communities Protection and Restoration

- **Biological Goals and Objectives and Resource Restoration and Protection Principles for Implementing Environmental Commitments.** Alternatives 4A, 2D, and 5A do not include specific Biological Goals and Objectives such as were included in the BDCP (Alternative 4) because these alternatives do not comprise a proposed HCP/NCCP. However, Alternatives 4A, 2D, and 5A do include species-specific resource restoration and protection principles for implementing Environmental Commitments that would ensure that the implementation of these commitments would achieve the intended mitigation of impacts.
- **Conservation Zones and Restoration Opportunity Areas.** Similar to the Plan Area and Study Area, the Conservation Zones and Restoration Opportunity Areas are still applied to the impact

analysis of Alternatives 4A, 2D, and 5A and all associated figures, tables, etc., since the activities pursued under these alternatives are expected to take place in these same areas.

- **Covered Activities and Covered Species.** Alternatives 4A, 2D, and 5A do not include a list of "covered species" or "covered activities" since these concepts are not requirements of the ESA Section 7 or CESA Section 2081(b) permit processes. However, this RDEIR/SDEIS does include analysis of the special-status species addressed in the new permit process, to the extent that implementation of Alternatives 4A, 2D, and 5A could result in impacts to these species.

ES.1.6 Public Review Process

All of the comments received during the Draft EIR/EIS 2013–2014 public review period were considered in the development of this RDEIR/SDEIS. This RDEIR/SDEIS does not include responses to comments on the Draft EIR/EIS, though some revisions have been made in response to comments received on the Draft EIR/EIS. New public comments made during the public review period for the RDEIR/SDEIS should be specific only to the newly circulated information contained in the RDEIR/SDEIS and should not address issues not directly included in the RDEIR/SDEIS. The Lead Agencies intend to only respond to comments that address analysis included within this RDEIR/SDEIS and not those related solely to the original Draft EIR/EIS. Formal responses to the comments previously submitted on the Draft BDCP and Draft EIR/EIS, as well as comments received on this RDEIR/SDEIS, will be published in the Final EIR/EIS.

This RDEIR/SDEIS is being noticed and circulated for public review and comment until August 31, 2015 in the same manner as the draft documents that were issued for public review on December 13, 2013. Two public meetings will be held to receive comments on the RDEIR/SDEIS, on Tuesday, July 28 in Sacramento, and on Wednesday, July 29, in Walnut Grove. Comments can also be submitted by U.S. mail or email.

BDCP Comments
P.O. Box 1919
Sacramento, CA 95812
BDCPComments@icfi.com

Following the close of the public review period, the Lead Agencies will consider and respond to all significant environmental issues raised in comments on the RDEIR/SDEIS (along with comments previously received on the Draft EIR/EIS) and incorporate revisions and response to comments into the Final EIR/EIS. The Final EIR/EIS will be circulated for a 30-day NEPA review period. Following completion of the Final EIR/EIS and the NEPA 30-day review period, DWR and Reclamation decision-makers will have the opportunity to certify/approve the Final EIR/EIS and submit a Notice of Determination/Record of Decision (NOD/ROD). Upon completion of the NOD/ROD, the agencies would be able to move forward with final permit approval and implementation.

ES.2 Description of Alternatives

In December 2014, state and federal Lead Agencies, along with the administration of Governor Edmund G. Brown Jr., announced several changes to the proposed water conveyance facilities to reduce environmental impacts. Since 2014, additional modifications to the proposed conveyance facilities and operations have been made based on refined engineering analysis and in consideration

of feedback received during the 2014 public comment period. Because the changes to Alternative 4 ripple through multiple environmental resources analyzed, information about the potential impacts of these changes can be found in Section 1.0, *Introduction*, Section 2.0, *Substantive Draft EIR/EIS Revisions*, Section 3.0, *Alternative 4: Conveyance Facility Modifications*, and Section 5.0, *Revisions to Cumulative Impact Analyses.*

As explained above, the RDEIR/SDEIS considers project revisions that were developed in response to input from the Draft EIR/EIS comment period (see below) as well as from agencies' comments regarding the challenges with meeting the standards required to issue long term assurances associated with compliance with Section 10 of the ESA and the NCCPA. Comments suggested DWR should pursue permit terms shorter than 50 years due to the levels of uncertainty regarding effectiveness of habitat restoration and the future effects of climate change. Other comments suggested that the proposed conveyance facility be separated from the habitat restoration components of the BDCP.

Consistent with this input, the Lead Agencies are analyzing an alternative implementation strategy with the new alternatives in this RDEIR/SDEIS, Alternatives 4A, 2D, and 5A. This strategy focuses on the conveyance facility improvements necessary for the SWP to address more immediate water supply reliability needs, and allows for other state and federal programs to address the long-term conservation efforts for species recovery through programs separate from the proposed project analyzed in this RDEIR/SDEIS. Alternatives 4A, 2D, and 5A would enable DWR to construct and operate new conveyance facilities that improve conditions for endangered and threatened aquatic species in the Delta while improving water supply reliability. Implementing the conveyance facilities alone would help resolve many of the concerns with the current south Delta conveyance system, would help reduce conveyance threats to endangered and threatened species in the Delta, and would allow for implementing habitat restoration projects on an expedited schedule through the state's EcoRestore program.

ES.2.1 Alternative 4

Revisions to the BDCP Alternative 4 in this RDEIR/SDEIS are limited to the water conveyance facilities Please refer to Figure ES-1, *Location of Conveyance Facility Alignment for Alternatives 4, 4A, 2D and 5A* for an overview of the conveyance facility alignment. No changes were made to operations or conservation measures. The changes would achieve the benefits listed below.

- Eliminate three pumping plants associated with the new intake facilities, and the visual effects associated with these facilities, on the east bank of the Sacramento River between Clarksburg and Courtland.
- Minimize construction activities on Staten Island, which provides important sandhill crane habitat, by removing tunnel launch facilities, large reusable tunnel material (RTM) storage areas, a barge landing site, and high-voltage power lines.
- Minimize impacts to private landowners by relocating project features to property already owned by DWR and reducing the acreage of lands needing to be acquired from private and Non-Governmental Organization (NGO) landowners.
- Eliminate the need for additional permanent power lines to the intake locations in the north Delta, including lines proposed near Stone Lakes National Wildlife Refuge.

- Eliminate impacts on Italian Slough (near Clifton Court Forebay) by removing an underground siphon.
- Reduce electric power requirements for construction and potentially operation of the facilities.
- Allow water to flow from the Sacramento River and through screened intakes, initial tunnels, an intermediate forebay, main tunnels, and into Clifton Court Forebay entirely by gravity at certain river stages (previously, only flows between the intermediate forebay and Clifton Court Forebay would be conveyed by gravity).
- Reduce tunnel operation and maintenance costs.

These changes would eliminate the need to build three separate two-story pumping plants along the Sacramento River between Clarksburg and Courtland. Instead, water could be moved from the river into tunnels by two new pumping plants constructed 40 miles away on DWR property at the southern end of the tunnels near Clifton Court Forebay.

Under Alternative 4, water would primarily be conveyed from the north Delta to the south Delta through tunnels. Water would be diverted from the Sacramento River through three fish-screened intakes on the east bank of the Sacramento River between Clarksburg and Courtland. Water would travel from the intakes to a sedimentation basin before reaching the tunnels. From the intakes water would flow into an initial single-bore tunnel, which would lead to an intermediate forebay on Glannvale Tract. From the southern end of this forebay, water would pass through an outlet structure into a dual-bore tunnel where it would flow by gravity to the south Delta. Water would then reach pumping plants to the northeast of the Clifton Court Forebay, where water would be pumped into the north cell of the expanded Clifton Court Forebay. The forebay would be dredged and redesigned to provide an area isolating water flowing from the new north Delta facilities. New siphon and canal connections would be constructed between the north cell of the expanded Clifton Court Forebay and the Banks and Jones pumping plants, along with control structures to regulate the relative quantities of water flowing from the north Delta and the south Delta. Alternative 4 would entail the continued use of the SWP/CVP south Delta export facilities. A map and a schematic diagram depicting the conveyance facilities associated with Alternative 4 are also provided in Figures 3-9 and 3-10 in Appendix A of this RDEIR/SDEIS.

ES.2.2 Alternative 4A

Under Alternative 4A water conveyance facilities would be constructed and maintained identically to those proposed and analyzed under Alternative 4 (including the modifications that have been made since the Draft EIR/EIS was released and described in Section 3, *Alternative 4: Conveyance Facility Modifications* and Section ES 2.1, *Alternative 4*, above).

Table ES.2.2.-1, below, provides a side-by-side comparison of Alternative 4 to Alternative 4A.

Table ES.2.2-1. Comparison of Alternative 4 and Alternative 4A

Element of Project Description	Alternative 4 (BDCP)	Alternative 4A
ESA Compliance	Section 10 (DWR)/Section 7 (Reclamation)	Section 7
California Endangered Species law Compliance	NCCPA	2081(b) permit
Facilities	Modified Pipeline/Tunnel Alignment: 3 intakes, 9,000 cfs	Modified Pipeline/Tunnel Alignment: 3 intakes, 9,000 cfs
Operations	Dual Conveyance; Operational Scenarios H1–H4 with Decision Tree (see Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS); evaluated at LLT	Dual Conveyance; Operational Scenario H3+ (a new operational scenario which includes a criterion for spring outflow bounded by the criteria associated with Scenarios H3 and Scenario H4, as described in Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS); evaluated as Scenarios H3-H4 at early long-term (ELT, which is associated with conditions around 2025)
Conservation Measures/ Environmental Commitments	Conservation Measures 2–21; includes Yolo Bypass Improvements and 65,000 acres of tidal wetland restoration	Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 16; includes up to 59 acres of tidal wetland restoration
CEQA Baseline	Existing Conditions	Existing Conditions
NEPA Baseline	No Action Alternative at LLT	No Action Alternative at ELT

While all aspects of water conveyance facility design, construction, and maintenance would be identical to those described for Alternative 4, operational components would be similar, but not identical. Alternative 4A starting operations will be determined through the continued coordination process as outlined in the Section 7 consultation process and 2081(b) permit prior to the start of construction. An adaptive management and monitoring program will be implemented to develop additional scientific information during the course of project construction and operations to inform and improve conveyance facility operational limits and criteria. Additionally, operational elements associated with Fremont Weir modifications would not be incorporated as part of this alternative, because Yolo Bypass improvements previously contemplated in the BDCP (under CM2) would not be implemented as part of Alternative 4A; instead, they would be assumed to occur as part of the No Action Alternative because they are required by the existing Biological Opinions (BiOps) (discussed below). Table 4.1-2 in the RDEIR/SDEIS provides a detailed characterization of operational criteria.

Implementation of Alternative 4A will include conveyance operations of both new and existing water conveyance facilities once the new north Delta facilities are completed and become operational, thereby enabling joint management of north and south Delta diversions. Operational limits included in Alternative 4A for south Delta export facilities would supplement the south Delta operations currently implemented in compliance with the FWS (2008) and NMFS (2009) BiOps. Alternative 4A incorporates existing criteria from the 2008 and 2009 BiOps (including Fall X2), and adds additional criteria for spring outflow and new minimum flow requirement at Rio Vista from January through August. The north Delta diversions and the head of Old River barrier (HORB) are

new facilities for the SWP and CVP and would be operated consistent with the proposed operating criteria for each of these facilities. All other criteria included in the FWS (2008) and NMFS (2009) BiOps and State Water Resources Control Board Water Right Decision 1641 (D-1641) will continue to be complied with, subject to adjustments made pursuant to the adaptive management process as described in the 2008 and 2009 BiOps, as part of the continued operations of the CVP and SWP. Alternative 4A includes modified or new operations and criteria of only the following elements.

- North Delta intake facilities.
- South Delta export operations.
- Head of Old River barrier operations.
- Spring Delta outflow.
- Rio Vista minimum flow standard in January through August.

Alternative 4A operations include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced residence times.

To achieve the regulatory standards under ESA Section 7 and CESA Section 2081(b) while also complying with NEPA and CEQA, some of the actions proposed in the conservation strategy for the Draft BDCP would be implemented under Alternative 4A, 2D, and 5A, though on a smaller scale, as environmental commitments to mitigate significant environmental effects of the conveyance facilities. These commitments consist primarily of habitat restoration, protection, enhancement, and management activities necessary to offset—that is, mitigate for—adverse effects from construction of the proposed water conveyance facilities, along with species-specific resources guidelines to ensure that implementation of these commitments would achieve the intended mitigation of impacts. Additionally, pertinent elements previously included as Avoidance and Minimization Measures and the proposed Adaptive Management and Monitoring Program would be implemented as applicable to the activities proposed under Alternative 4A. These, too, would serve a mitigation function under CEQA. All of these components would function as de facto CEQA and NEPA mitigation measures for the construction and operations-related impacts of Alternative 4A. Section 4.1.2.3 of the RDEIR/SDEIS describes and analyzes the Alternative 4A Environmental Commitments.

Portions of the actions previously contemplated under CM3, CM4, CM6, CM7, CM8, CM9, CM10, CM11, CM12, CM15, and CM16 would be included in Alternatives 4A, 2D, and 5A, but at different levels. Table ES.2.2-2 provides a comparison of the acreages or actions for each environmental commitment proposed for Alternatives 4A, 2D, and 5A.

Table ES.2.2-2. Comparison of Environmental Commitments under Alternatives 4A, 2D, and 5A

Environmental Commitments	4A	2D	5A
3: Natural Communities Protection & Restoration			
Valley /Foothill Riparian	103 acres	122 acres	91 acres
Grassland	1,060 acres	1,089 acres	1,034 acres
Vernal Pool Complex & Alkali Seasonal Wetland Complex	150 acres	150 acres	150 acres
Nontidal Marsh	119 acres	187 acres	118 acres
Cultivated Lands	11,870 acres	13,410 acres	11,330 acres
Total:	**Up to 13,302 acres**	**Up to 14, 958 acres**	**Up to 12, 724 acres**
4: Tidal Natural Communities	Up to 59 acres	Up to 65 acres	Up to 55 acres
6: Channel Margin Enhancement	Up 4.6 levee miles	Up to 5.5. levee miles	Up to 3.1 levee miles
7: Riparian Natural Community	Up to 251 acres	Up to 297 acres	Up to 222 acres
8: Grassland Natural Community	Up to 1,070 acres	Up to 1,099 acres	Up to 1,044 acres
9: Vernal Pool & Alkali Seasonal Wetland Complex Restoration	Up to 34 acres	Up to 34 acres	Up to 34 acres
10: Nontidal Marsh Restoration	Up to 832 acres	Up to 1,307 acres	Up to 826 acres
11: Natural Communities Enhancement & Management	At sites protected or restored under Environmental Commitments 3-10	At sites protected or restored under Environmental Commitments 3-10	At sites protected or restored under Environmental Commitments 3-10
12: Methylmercury Management	At sites restored under Environmental Commitment 4	At sites restored under Environmental Commitment 4	At sites restored under Environmental Commitment 4
15: Localized Reduction of Predatory Fishes	At north Delta intakes and at Clifton Court Forebay	At north Delta intakes and at Clifton Court Forebay	At north Delta intakes and at Clifton Court Forebay
16: Nonphysical Fish Barrier	At Georgianna Slough	At Georgianna Slough	At Georgianna Slough

ES.2.3 Other RDEIR/SDEIS Alternatives

Under Alternatives 2D and 5A, water conveyance facilities would be constructed and maintained similarly to those proposed and analyzed under Alternative 4 and 4A. However, Alternative 2D would entail five intakes in the same locations as those under Alternative 2A (as shown in Figure 30-2 of the Draft EIR/EIS), rather than three. As proposed for Alternative 4, a new pumping facility would be constructed northeast of the north cell of the expanded Clifton Court Forebay, along with control structures to regulate the relative quantities of water flowing from the north Delta and the south Delta to the Banks and Jones Pumping Plants. All alternatives would entail the continued use of the SWP/CVP south Delta export facilities.

Alternative 5D would include one intake rather than three. Construction of a single intake site (Intake 2) would preclude the need for ancillary facilities and features associated with Intakes 3 and

5. Alternative 5A would not require construction of a single-bore tunnel between Intake 5 and the intermediate forebay. An operable barrier would not be constructed at the head of Old River.

Operational components of the water conveyance facilities under Alternative 2D would be similar, but not identical, to those described under Scenario B in Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS. Operational elements associated with Fremont Weir modifications would not be incorporated, because Yolo Bypass improvements previously contemplated for Alternative 2A would not be implemented as part of Alternative 2D; instead, they would be assumed to occur as part of the No Action Alternative because they are required by the existing BiOps.

Implementation of Alternative 2D would include operations of both new and existing water conveyance facilities once the new north Delta facilities are completed and become operational, thereby enabling joint management of north and south Delta diversions. Operations included in this alternative for south Delta export facilities would replace the south Delta operations currently implemented in compliance with the FWS (2008) and NMFS (2009) BiOps. The north Delta intakes and the HORB would be new facilities for the SWP and CVP. Compliance with all other criteria included in the FWS (2008) and NMFS (2009) BiOps and D-1641, including Fall X2, the E:I ratio, and operations of the Delta Cross Channel gates and the Suisun Marsh Salinity Control Gates, will continue as part of the continued operations of the CVP and SWP. When compared to operations under the No Action Alternative, Alternative 2D includes modified or new operations and criteria of only the following elements.

- North Delta intake facilities.
- South Delta export operations.
- HORB operations.
- Rio Vista minimum flow standard in January through August.

Alternative 2D operations include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced residence times.

Operational components of the water conveyance facilities under Alternative 5A would be similar, but not identical, to those described under Scenario C in Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS. Operational elements associated with Fremont Weir modifications would not be incorporated as part of this alternative, because Yolo Bypass improvements previously contemplated for Alternative 5 (under CM2) would not be implemented as part of Alternative 5A; instead, they would be assumed to occur as part of the No Action Alternative because they are required by the existing BiOps.

Implementation of Alternative 5A would include operations of both new and existing water conveyance facilities once the new north Delta facilities are completed and become operational, thereby enabling joint management of north and south Delta diversions. The north Delta intake would be a new facility for the SWP. Compliance with all other criteria included in the FWS (2008) and NMFS (2009) BiOps and D-1641, including Fall X2, the E:I ratio, and operations of the Delta Cross Channel gates and the Suisun Marsh Salinity Control Gates, will continue as part of the operation of the CVP and SWP. When compared with operations under the No Action Alternative, Alternative 5A includes modified or new operations and criteria of only the following elements.

- North Delta intake facilities.

- Rio Vista minimum flow standard in January through August.

Alternative 5A operations include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced residence times.

As discussed in Section ES 2.1, *Alternative 4*, portions of the actions previously contemplated under CM3, CM4, CM6, CM7, CM8, CM9, CM10, CM11, CM12, CM15, and CM16 would be included in Alternatives 2D and 5A, but at different levels. See Table ES.2.2-2, *Comparison of Environmental Commitments under Alternatives 4A, 2D, and 5A*, above, for a comparison of the implementation of Environmental Commitments.

Table ES.2.3-1 below, provides an overview of the alternatives analyzed in the RDEIR/SDEIS. The complete descriptions of these alternatives is provided in Section 3, *Alternative 4: Conveyance Facility Modifications* and Section 4, *New Alternatives: Alternatives 4A, 2D, and 5A* of this RDEIR/SDEIS.

Table ES.2.3-1. Comparison of Alternative 4, 2D, 4A, 5A

Alternative	Alignment Option	Conveyance Type	Intake Locations	North Delta Diversion Capacity	Operational Scenario	Federal ESA and CESA Compliance Approach
4	Pipeline/ Tunnel	Dual	2, 3, and 5	9,000 cfs	H	Section 10/ NCCP
2D	Pipeline/ Tunnel	Dual	1 through 5	15,000 cfs	B	Section 7/ 2081(b) permit
4A*	Pipeline/ Tunnel	Dual	2, 3, and 5	9,000 cfs	H3+** (See Table ES.2.2-1)	Section 7/ 2081(b) permit
5A	Pipeline/ Tunnel	Dual	2	3,000 cfs	C	Section 7/ 2081(b) permit

* Alternative 4A is the CEQA and NEPA preferred project proposed by State and Federal Lead Agencies.

** Operational Scenario H for Alternative 4A would not include the operation of the Fremont Weir modification associated with Yolo Bypass improvements because those activities would not be implemented as part of Alternative 4A. Starting operations would be determined through the Section 7 and 2081(b) permit processes and an adaptive management and monitoring program would guide future operational limits and criteria.

ES.3 Summary of Substantive Revisions

The following sections provide a brief overview of the substantives changes and conclusions provided in the RDEIR/SDEIS.

ES.3.1 Improved Fish and Aquatic Habitat Analyses

Section 2.1, *Improved Fish and Aquatic Habitat Analyses*, summarizes revisions made to Chapter 11, Fish and Aquatic Resources, since the release of the Draft EIR/EIS. Revisions were made to address design changes associated with the proposed project, incorporate the latest engineering assumptions and modeling procedures, and to respond to comments raised by the public.

ES.3.1.1 Summary of Changes

ES.3.1.1.1 New Data and/or Modeling

- Effects of construction impacts are reassessed to account for changes in the proposed construction approach.
- Potential North Delta Diversion entrainment effects on striped bass and American shad eggs and larvae are revised.
- Analysis to assess the consequences on downstream aquatic habitat was conducted.
- Selenium and mercury analysis and potential effects on aquatic resources are revised.
- Updated water quality data is integrated into selenium quantitative modeling for water and fish tissue.

ES.3.1.1.2 New/Revised Assumptions

- Assessed and revised assumptions related to installation of piles needed for conveyance facility construction.
- Updated reservoir carryover storage for the Existing Conditions baseline.
- Updated assumptions for sea level rise, restoration sediment demand, and effects of the creation of new points of diversion.

ES.3.1.1.3 Summary of Analyses and Results

Draft EIR/EIS Chapter 11, *Aquatic Resources*, provided substantial information about the potential effects of the alternatives on fish and their habitats in the Plan Area and in upstream areas used by the evaluated species. Since release of the Draft EIR/EIS, the chapter has been revised to address design changes associated with the proposed project, to incorporate the latest engineering assumptions and modeling procedures, and to respond to comments raised by the public. Several comments requested elaboration on the methods used to arrive at CEQA conclusions and NEPA effects determinations and on the effects of contaminants. Additionally, commenters requested analyses of the effects on downstream bays (i.e., San Francisco Bay), and that all analyses include a NEPA conclusion. Since release of the Draft EIR/EIS, additional information has been developed pertaining to the following: the use of RTM for restoration efforts; the construction effects of the modification to Clifton Court Forebay; and the construction of an operable barrier at Head of Old River. This section briefly describes the revisions and their effects on the impact analysis.

Revisions to Impacts in Alternatives Included in the Draft EIR/EIS

The following describes the changes in impact conclusions for alternatives included the Draft EIR/EIS based on new information, comments received, and the application of a consistent methodology across alternatives, as shown in Section 11.3.6 of Appendix A of the RDEIR/SDEIS. The same approach was used to determine effects of Alternatives 4A, 2D, and 5A, and the conclusions for those alternatives are shown in Table ES-9, Summary of BDCP/California WaterFix RDEIR/SDEIS Impacts and Mitigation Measures.

- Effects were changed from less-than-significant level (CEQA)/No Determination (NEPA) to less-than-significant level (CEQA)/not adverse (NEPA) for:

- Effects of water operations on rearing habitat (AQUA-5) and migration conditions for delta smelt (AQUA-6) for Alternatives 2A, 2B, 2C, 4, 5, 6A, 6B, 6C, 7, 8, and 9.
- Effects of water operations on spawning, egg incubation, and rearing habitat for longfin smelt (AQUA-22) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9.
- Effects of contaminants associated with restoration measures on longfin smelt (AQUA-26) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, and 9.
- Effects of water operations on spawning and egg incubation habitat for Chinook salmon (winter-run ESU) (AQUA-40) for Alternatives 4 and 7.
- Effects of water operations on migration conditions for Chinook salmon (winter-run ESU) (AQUA-42) for Alternatives 4, 5, and 7.
- Effects of water operations on spawning and egg incubation habitat for Chinook salmon (spring-run ESU) (AQUA-58) for Alternatives 2A, 4, 5, and 7.
- Effects of water operations on migration conditions for Chinook salmon (spring-run ESU) (AQUA-60) for Alternatives 3, 4, 5, and 7.
- Effects of water operations on migration conditions for Chinook salmon (fall-/late fall–run ESU) (AQUA-78) for Alternative 7.
- Effects of water operations on migration conditions for steelhead (AQUA-96) for Alternatives 3, 4, 5, and 7.
- Effects of water operations on migration conditions for white sturgeon (AQUA-132) for Alternative 4, 5, 6A, 9.
- Effects of water operations on migration conditions for white sturgeon (AQUA-150) for Alternative 1A, 2A, 3, 4, 5, 6A, 7, and 9.

- Effects were changed from less-than-significant level (CEQA)/No Determination (NEPA) to significant and unavoidable with mitigation (CEQA)/adverse (NEPA) for:
  - Effects of water operations on spawning and egg incubation habitat for Chinook salmon (winter-run ESU) (AQUA-40) for Alternative 3.
  - Effects of water operations on migration conditions for Chinook salmon (fall-/late fall–run ESU) (AQUA-78) for Alternative 4.
- Effects were changed from significant and unavoidable with mitigation (CEQA)/adverse (NEPA) to less than significant (CEQA)/not adverse (NEPA) for:
  - Effects of water operations on rearing conditions for Chinook salmon (winter–run ESU) (AQUA-41) for Alternative 2A and 5.
  - Effects of water operations on migration conditions for Chinook salmon (fall-/late fall–run ESU) (AQUA-78) for Alternative 5.
  - Effects of water operations on migration conditions for green sturgeon (AQUA-132) for Alternative 2A and 7.
- Effects were changed from less-than-significant level (CEQA)/no determination/not adverse (NEPA) with no mitigation to less-than-significant level (CEQA)/not adverse (NEPA) for effects

of contaminants associated with restoration (AQUA-8) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, and 9.

- Effects of contaminants associated with restoration measures on steelhead (AQUA-98) were changed from less than significant/beneficial (CEQA)/beneficial (NEPA) to less than significant (CEQA)/not adverse (NEPA) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9.
- Effects of contaminants associated with restoration measures on green sturgeon (AQUA-134) changed from less than significant/beneficial (CEQA)/beneficial (NEPA) for Alternatives1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 6A, 6B, 6C, 8, and 9 to less than significant/not adverse.
- Effects of contaminants associated with restoration measures on river lamprey (AQUA-188) were changed from less than significant/beneficial (CEQA)/not adverse/beneficial (NEPA) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 to less than significant/not adverse.
- Effects of water operations on entrainment of non-covered aquatic species of primary management concern (AQUA-201) were changed from less than significant (CEQA)/not adverse (NEPA) for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6B, 6C, 7, 8, and 9 (with the exception of no impact/no effect for California bay shrimp, and beneficial for Alternative 9 for largemouth bass), and less than significant/not adverse for 6A (with exception of beneficial for largemouth bass and no impact/no effect for California bay shrimp), to significant and unavoidable (CEQA)/ adverse (NEPA) for striped bass and American shad under all alternatives (except less than significant/not adverse for Alternative 9) and less than significant (CEQA)/not adverse (NEPA) for the other non-covered fishes under all alternatives
- Effects of water operations on spawning and egg incubation habitat for non-covered aquatic species of primary management concern (AQUA-202) changed from a range of no impact and less than significant/not adverse to less than significant/not adverse, depending on the species.
- Effects of water operations on rearing habitat for non-covered aquatic species of primary management concern (AQUA-203) were changed from a range (depending on the species) of less than significant and significant and unavoidable (CEQA)/not adverse (NEPA) to less than significant/not adverse.

Major Results of Updates to the Fish and Aquatic Habitats Analysis

The following is a summary of the revisions made to Chapter 11, *Fish and Aquatic Resources* in the Draft EIR/EIS. The same approach was used in analyzing new Alternatives 4A, 2D, and 5A presented in this RDEIR/SDEIS.

- The methods section is updated to better explain the rationale and process applied to development of CEQA conclusions and NEPA effects determinations.
- A description of the potential changes in sediment loading as a result of the creation of new points of diversion under Alternatives 1A through 8 is included.
- An analysis of changes in sediment loading to the Bay for all of the alternatives, with specificity to operations-related effects and restoration-related effects, is included.
- The analysis of selenium and mercury has been revised in three locations: revisions to Conservation Measure 12 Methylmercury Management and Avoidance and Minimization Measure 27 Selenium Management (see Appendix D); revisions to the CM4 tidal habitat

contaminants analysis; and a new impact to specifically address effects of contaminants on fish as a result of change in operations (See Chapter 11, Impact AQUA-219 in Appendix A).

- New impacts were created to analyze impacts to fish and aquatic habitat under the No Action Alternative (Impacts AQUA-NAA1-16).
- AMM27 is expanded, with specific requirements included to reduce the potential for bioaccumulation in covered fish species.
- Better understanding and articulation of the potential for selenium and mercury effects on fish as a result of both operations and restoration actions proposed under the alternatives has allowed a more certain determination for contaminants effects under NEPA, which have been determined to be not adverse across all alternatives.
- The effects of underwater noise caused by pile driving were reassessed to account for changes in the proposed construction approach.
- Reanalysis to assess the potential for entrainment of noncovered species of primary management concern because for some (striped bass, American shad) most of their spawning could occur upstream of the proposed north Delta intake locations, and the early life stages (eggs/larvae) would be susceptible to entrainment.

ES.3.2 Water Quality Revisions

Water quality constituent sections in Chapter 8, *Water Quality* of the Draft EIR/EIS that received the most updating were electrical conductivity, chloride, selenium, and bromide. Additionally, assessments of effects on *Microcystis* and constituents downstream of the Plan Area in San Francisco Bay were added. Several other modifications and additions were made to the assessments of mercury, nutrients, trace metals, and dissolved oxygen.

Additionally, three new alternatives, Alternative 4A, 2D, and 5A, were evaluated for effects on water quality from construction and operation of the water conveyance facility (CM1) and for other environmental commitments (CM 3, 4, 6, 7, 9–12, 15, and 16). The alternatives evaluated in Chapter 8 contain many similarities to each other from a water quality perspective, and thus are often grouped together in the following discussion. The three new alternatives are also very similar to each other, but from a water quality perspective, are fundamentally different than the alternatives evaluated in Chapter 8, in that they contain substantially less tidal restoration acreage. Although this section is focused on describing changes made in Chapter 8 from the Draft EIR/EIS, differences between the alternatives assessed in Chapter 8 and the three new alternatives are highlighted where appropriate.

Section 2.2, *Water Quality Revisions*, of this RDEIR/SDEIS describes additional analyses undertaken to more accurately characterize the potential for exceedances of water quality standards and summarizes associated

ES.3.2.1 Summary of Changes

ES.3.2.1.1 New Data and/or Modeling

- New modeling and sensitivity analyses were conducted to evaluate the impacts to electrical conductivity (EC) from:

- Changing the existing Emmaton compliance location to a new location at Threemile Slough.
- Monthly-daily patterning at the Delta boundary locations.
- Including operation of the Suisun Marsh Salinity Control Gates consistent with the assumptions in the No Action Alternative.
- Removing tidal restoration areas (as a means of understanding the contribution of restoration versus CM1 to exceedances of EC objectives).
- Revising Head of Old River Barrier operations during April and May.

- Chloride modeling results were updated:
  - New calculation of exceedances of the 150 mg/L chloride objective were prepared based on calendar years 1976–1990 of the original modeled results (i.e., 15 years instead of 16), because the objective applies on a calendar year basis.
- New calculations were prepared of objective exceedances based on the water year type at the modeled time step (e.g., LLT) rather than the water year type defined for Existing Conditions.
- Selenium modeling was updated to include:
  - Updated source water concentration data.
  - Updated bioaccumulation modeling methodology for bass in the Delta.
  - Expanded discussion of residence time in the Delta and its effect on selenium bioaccumulation in the Delta.
- New modeling for sensitivity analyses was conducted to evaluate what factors were causing or contributing to bromide increases in Barker Slough.
- Water column and fish tissue methylmercury modeling was conducted under Alternative 8 and was corrected to be based on proper source water concentration data.
- A new assessment of *Microcystis aeruginosa* was prepared.
- New assessment of water quality effects in San Francisco Bay was included.
- Updated dissolved oxygen assessment was prepared to include an evaluation of the effects from changes in San Joaquin River flows.

ES.3.2.1.2 New/Revised Assumptions

- The EC compliance location is now at Emmaton instead of Threemile Slough for Alternative 4; Emmaton also is the compliance location for Alternatives 4A, 2D, and 5A.
- The project description now assumes continued operation of the Suisun Marsh Salinity Control Gates for all project alternatives, consistent with assumptions included in the No Action Alternative.

ES.3.2.1.3 New/Revised Criteria or Thresholds

- Updated numeric thresholds were used in the selenium assessment to EPA's draft water quality criteria for the protection of freshwater aquatic life from toxic effects of selenium released in May 2014. The draft criteria include tissue-based concentrations, which are most closely

associated with reproductive effects, and water concentrations, which are to be used when fish tissue data is not available.

ES.3.2.2 Summary of Analyses and Results

The following summarizes the results of the above described revisions on the water quality impact analysis.

EC and Chloride

- With the change in the EC compliance point from Threemile Slough to Emmaton, Alternative 4 no longer shows a significant impact with respect to EC objective exceedance at Emmaton, while all other alternatives still show significant impacts. The three new alternatives assessed (4A, 2D, and 5A) also maintain the existing compliance point at Emmaton and, thus, also do not show significant impacts due to EC objective exceedance at Emmaton.
- Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, and 9 no longer show significant impacts with respect to EC objective exceedance at San Andreas Landing. The new Alternatives, 4A, 2D, and 5A also show no significant impacts with respect to EC objective exceedance at San Andreas Landing.
- Based on the sensitivity analyses, optimizing the design and siting of restoration areas is expected to be able to reduce EC and chloride increases in Suisun Marsh, relative to Existing Conditions and the No Action Alternative, to levels that would be less than significant.
- Revising the assessment of the 150 mg/L chloride objective to properly calculate exceedances on a calendar year basis resulted in fewer exceedances of the objective under the project alternatives assessed in the Draft EIR/EIS (1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9) than previously indicated. The specific number of exceedances predicted under the revised approach varied by alternative, and for some alternatives remained a significant impact. The new Alternatives 4A, 2D, and 5A, did not result in any exceedances of this objective, likely in part due to the lower acreage of tidal restoration included in these alternatives.
- Revising the electrical conductivity assessment to correctly apply the water quality objective based on the modeled time step (i.e., LLT) hydrology and water year type, rather than the Existing Conditions water year type, resulted in the modeled percent of days out of compliance increasing by 0–5% for both the No Action Alternative and project alternatives, depending on the alternative and water quality objective evaluated. However, these changes did not alter any of the related impact conclusions.
- All alternatives assessed in the Draft EIR/EIS (1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9) remained significant and unavoidable for chloride and EC, but based on the sensitivity analyses and revisions identified above, the magnitude of the impacts is substantially less than was indicated in the Draft EIR/EIS.
- Alternatives 4A, 2D, and 5A would not result in significant impacts for EC related to objective exceedance in the Sacramento River at Emmaton, would not result in substantial degradation in the western Delta due to increased chloride concentrations, would have less adverse water quality effects in the western Delta related to EC, and would have fewer exceedances of the fish and wildlife EC objective between Prisoners Point and Jersey Point, such that it is feasible to introduce mitigation that would prevent significant impacts related to EC increases. After introduction of these mitigation measures, Alternatives 4A, 2D, and 5A would result in less than

significant impacts for EC. Alternatives 4A, 2D, and 5A would also result in less than significant impacts for chloride.

Selenium

- Results of updated selenium modeling showed that there would generally be a greater increase from Existing Conditions and No Action Alternative concentrations to the concentrations under the alternatives than previously predicted (i.e., the relative effect of the project alternatives was greater). However, the absolute values of all of the estimated concentrations for Existing Conditions, the No Action Alternative, and all project alternatives were lower than modeled in the Draft EIR/EIS, and thus were lower relative to thresholds of concern and water quality criteria used in the assessment.
- The result of updates to bioaccumulation modeling for selenium is that predicted bass tissue concentrations in the Delta are more consistent across location and alternative than was determined in the Draft EIR/EIS. This update could not be made for sturgeon bioaccumulation modeling because there was insufficient monitoring data to calibrate the model for such a change.
- The changes discussed above did not result in any changes to the selenium impact conclusions in the Draft EIR/EIS.

Bromide

- The cause of the modeled increases in bromide in Barker Slough, which was driving the impact conclusion for almost all alternatives, is due to the assumptions regarding tidal habitat restoration not due to conveyance facility operations. Thus, the mitigation measure was revised to more appropriately address actions that could lessen the projected impact, based on these findings.
- Because new alternatives 4A, 2D, and 5A contain a lower acreage of tidal restoration, significant impacts with regard to bromide are not expected under these alternatives.

Mercury

- Revisions and updates to mercury modeling results made for Alternative 8 lowered the concentrations predicted under Alternative 8, but did not change the assessment conclusions.
- Implementation of restoration under the Environmental Commitments would result in significant and unavoidable impacts with regard to mercury concentrations under Alternatives 4A, 2D, and 5A; however, these effects would be localized in the vicinity of restoration areas and the magnitude of effect would be less than other alternatives because the amount of restoration proposed under the new alternatives would be substantially less than other proposed alternatives.

Microcystis

- Because of the combined effects of increased temperatures due to climate change (not related to the project alternatives) and increased residence times in the Delta (due primarily to the effects of the conveyance facility and tidal restoration), effects of project alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9 on *Microcystis* were considered adverse (under NEPA) and significant and unavoidable (under CEQA). Mitigation measure WQ-32 was created to attempt to lessen the effects of the alternatives on Microcystis.

- Because new alternatives 4A, 2D, and 5A contain a lower acreage of tidal restoration, residence times related to implementation of the alternative are not expected to increase as substantially, and thus significant impacts with regard to *Microcystis* are not expected under these alternatives, relative to Existing Conditions and the No Action Alternative.

San Francisco Bay

- These assessment of seaward effects of the project alternatives did not identify any new adverse or significant impacts or any substantial increase in the severity of previously identified impacts, except in the case of selenium. For Alternatives 6–9, projected increases in selenium loading and concentrations in North San Francisco Bay were considered adverse (under NEPA) and significant and unavoidable (under CEQA), while Alternatives 1–5 were considered not adverse and less than significant.

Dissolved Oxygen

Analysis of flows in the San Joaquin River at Stockton showed that in most cases flows decreased by a small amount and, thus, would not be expected to substantially move the location of minimum DO in the river.

ES.3.3 Air Quality, Health Risk Assessment, Traffic and Noise Revisions

Section 2.3, *Air Quality, Health Risk Assessment, Transportation, Noise, and Energy Revisions*, presents updated calculations based on improved construction assumptions and revises the impact assessment to reflect the amended construction data. The following summarizes the changes that can be found in Section 2.3 and Appendix A of the RDEIR/SDEIS.

ES.3.3.1 Summary of Changes

ES.3.3.1.1 New Data and/or Modeling

- Revised mobile, marine and helicopter source emissions, modeling based on updated guidance documents and new models, including the California Air Resources Board (ARB) model, EMFAC2014.
- Updated concrete batching modeling based on CO_2 emission factors for anticipated compression strength values.
- Included fugitive reactive organic emissions from asphalt paving.
- Modeled receptor exposure to localized PM2.5 and PM10 concentrations.
- Estimated gasoline and diesel consumption by equipment and vehicles.

ES.3.3.1.2 New/Revised Assumptions

- Updated 2014 economic assessment ("cost estimate"), including revised truck trip, scheduling, material quantity, and equipment operating assumptions.
- Revised activity scaling factors for the PTO, East, West, and SCO alternatives.
- Updated construction electricity demand based on changes to project design.

- Refined environmental commitments that establish aggressive performance standards equipment, vehicles, and material movement activities.
- Revised O&M assumptions based on changes to project design.
- Revised cancer risk calculation daily breath rates and faction at home assumptions per Office of Environmental Health Hazard guidance.

ES.3.3.1.3 New/Revised Criteria or Thresholds

- Air district thresholds for localized PM2.5 and PM10 exposure.

ES.3.3.2 Summary of Analyses and Results

- Revised air quality, health risk, noise, and traffic analysis based on updated construction assumptions outlined in the 2014 cost estimate from 5RMK Inc.
- Revised air quality and Health Risk Assessment (HRA) impact analysis based on updated performance standards outlined in the Construction Equipment Exhaust Reduction Plan.
- Incorporated new air quality models and emission factors released since the Public Draft EIR/EIS.
- Revised operational emissions based on the latest understanding of project operations.
- Expanded the analysis of odor impacts to consider excavated organic matter and land use change.
- Included the General Conformity determination under the Clean Air Act.
- Added explicit identification and disclosure of health risks from receptor exposure to localized particulate matter, localized carbon monoxide, localized diesel particulate matter, and *C. immitis* (Valley Fever).
- Revised cancer risk calculations to account for the fraction of time spent at home and daily breath rates by age groups, per OEHHA 2015 guidance.
- Incorporated an estimate of diesel and gasoline consumption into the energy impact analysis.

ES.3.4 Terrestrial Resources Revisions

The analysis for Alternative 4 in Chapter 12, *Terrestrial Biological Resources*, of the Draft EIR/EIS was revised to account for changes in the magnitude of direct impacts on natural communities and species habitat associated with the footprint of the revised water conveyance facilities, including the revised power line alignment and assumptions. In addition, analyses for the three new sub-alternatives (Alternatives 4A, 2D, and 5A) were conducted. The following summarizes the changes that can be found in Chapter 12*, Terrestrial Biological Resources*, Section 12.3.3.9 of Appendix A of the RDEIR/SDEIS and the new analyses can be found in Section 4 of the RDEIR/SDEIS.

ES.3.4.1 Summary of Changes

ES.3.4.1.1 New Data and/or Modeling

- Updated method for mapping and quantifying wetlands and waters of the United States.
- Updated term of Avoidance and Minimization Measures (AMM) implementation.
- Updated AMM2 Construction Best Management Practices, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, AMM11 Covered Plant Species, AMM18 Swainson's Hawk and White-Tailed Kite, AMM19 California Clapper Rail and California Black Rail, AMM20 Greater Sandhill Crane, AMM26 Salt Marsh Harvest Mouse and Suisun Shrew, and AMM27 Selenium Management.
- Updated acreage impacts of Alternative 4.
- Updated impacted acres of tidal perennial aquatic natural community, tidal freshwater emergent wetland natural community, valley/foothill riparian natural community, nontidal perennial aquatic natural community, nontidal freshwater perennial emergent wetland natural community, alkali seasonal wetland complex natural community aquatic habitat, vernal pool complex natural community, managed wetland, grassland natural community, vernal pool crustacean modeled habitat, modeled valley elderberry longhorn beetle habitat, vernal pool habitat, and nonlisted vernal pool invertebrate habitat in the study area.
- Updated impacted acres of the California red-legged frog, California tiger salamander, giant garter snake, western pond turtle, special-status reptiles, California black rail, California least tern, greater sandhill crane, lesser sandhill crane, least Bell's vireo, yellow warbler, Swainson's hawk, tricolored blackbird, western yellow-billed cuckoo, white-tailed kite, yellow-breasted chat, Cooper's hawk and osprey, golden eagle and ferruginous hawk, double-crested cormorant, great blue heron, great egret, snowy egret, black-crowned night heron, short-eared owl, northern harrier, mountain plover, California horned lark, grasshopper sparrow, least bittern, white-faced ibis, loggerhead shrike, Modesto song sparrow, yellow-headed blackbird, riparian brush rabbit, San Joaquin kit fox, San Joaquin pocket mouse, special-status bats, grassland plant species, valley/foothill riparian plant species, tidal wetland plant species, and nontidal wetland plant species.
- Updated methylmercury exposure impact discussion for California black rail, California clapper rail, California least tern, greater sandhill crane, lesser sandhill crane, Suisun song sparrow, saltmarsh common yellowthroat, tricolored blackbird, double-crested cormorant, great blue heron, great egret, snowy egret, black-crowned night heron, least bittern, white-faced ibis, and yellow-headed blackbird.
- Updated acres of fill of jurisdictional wetlands waters associated with all alternatives.
- Updated acres of potentially jurisdictional wetlands and waters potentially affected by CM2-CM10 under Alternative 4.
- Revised California least tern indirect effect CEQA conclusion to less-than-significant.
- Updated acres of fill of jurisdictional wetlands associated with all alternatives.
- Updated acres of potentially jurisdictional wetlands and waters potentially affected by CM2–CM10 under Alternative 4.

ES.3.4.2 Summary of Analyses and Results

The terrestrial resources analysis for Alternative 4 was revised to reflect impacts that changed due to a revised project footprint for Alternative 4. Affected species and habitats were updated with the number of impacted acres of habitat and the impact discussion was revised accordingly (see Appendix 12E *Detailed Accounting of Direct Effects of Alternatives on Natural Communities and Covered Species* in Appendix A of this RDEIR/SEIS). Species with habitats that include high tidal marshes are at risk for methylmercury exposure. Modeled methylmercury effects on largemouth bass (used as a surrogate species for analysis) did not differ substantially from existing conditions. Restoration actions that would create high and low tidal marsh, which is Black Rail habitat, could provide biogeochemical conditions for methylation of mercury in the in the newly inundated soils. There is potential for increased exposure of the foodwebs to methylmercury in these areas, with the level of exposure dependent on the amounts of mercury available in the soils and the biogeochemical conditions. Methylmercury effects discussions were updated and CM12 was expanded for each species to address methylmercury effects. NEPA effects and CEQA conclusions for Alternative 4 terrestrial resources in the RDEIR/SDEIS remained generally consistent with the Draft EIR/EIS.

The RDEIR/SDEIS also includes analyses of the new sub-alternatives (Alternatives 4A, 2D, and 5A). These analyses can be found in Sections 4.3.8 (Alternative 4A), 4.4.8 (Alternative 2D), and 4.5.8 (Alternative 5A) of this RDEIR/SEIS. Tidal restoration under these alternatives would be substantially less than under the BDCP and thus the impacts to terrestrial resources from tidal restoration would be considerably less. However, the benefits of the large amount of tidal restoration, as well as other large amounts of other natural community restoration under the BDCP, would not occur under Alternatives 4A, 2D, and 5A, which is reflected in the NEPA effects and CEQA conclusions for several natural communities that went from being beneficial under the BDCP Alternatives to less-than-significant under Alternatives 4A, 2D, and 5A. The NEPA effects and CEQA conclusions for the other terrestrial resources are also different than those of the BDCP alternatives and, where different, change from being not adverse/less-than-significant to no effect/no impact.

A summary of some of the key revisions found in the RDEIR/SEIS compared to the Draft EIR/EIS are presented below.

- Inclusion of NEPA effects determinations for Impact BIO-69 Loss or Conversion of Habitat for and Direct Mortality of Greater Sandhill Crane and BIO-70 Effects on Greater Sandhill Crane Associated with Electrical Transmission Facilities under all alternatives.
- Updated NEPA effects determinations for indirect effects from methylmercury for several species under Alternative 4.
- Revised Mitigation Measure BIO-147: Monitor Bank Swallow Colonies and Evaluate Winter and Spring Flows Upstream of the Study Area.
- Revised Mitigation Measure BIO-162: Conduct Preconstruction Survey for American Badger.
- New Mitigation Measure BIO-176: Compensatory Mitigation for Fill of Waters of the U.S.

ES.3.5 Revised Project Descriptions and Enhanced Level of Detail (Alt 4)

Section 2.4, *Revised Project Description and Enhanced Level of Detail*, presents additional revisions that explain how, for the purposes of CEQA and NEPA, project-level detail is included for water conveyance facilities and provides additional information about early implementation actions, including examples of habitat restoration and enhancement activities.

ES.3.5.1 Summary of Analyses and Results

The RDEIR/SDEIS includes a number of revisions to the project description and an enhanced level of detail for Alternatives 4, 4A, 2D, and 5A. These include more explanation regarding the analysis of water conveyance facilities, updates to conservation measures and environmental commitments and their use to offset impacts related to the project, and more information on the role of the Bureau of Reclamation, as NEPA Lead Agency and other cooperating and responsible agencies.

Each component feature of the water conveyance facilities is analyzed at a resource-specific level. Following the release of the Draft EIR/EIS, DWR's Division of Engineering created a revised project footprint for Alternative 4. Some of the major changes include removing pumping plants from the north Delta and creating combined pumping plants on the north end of Clifton Court Forebay in the south Delta, which would allow water to flow by gravity through the conveyance facilities. The alignment was also revised to lessen impacts to wildlife on Staten Island.

Analyses of Alternatives 4 and 4A in the RDEIR/SDEIS reflect this new project footprint. Alternatives 2D and 5A reflect the alignment except for the number and location of intakes. Similar to Alternative 2, Alternative 2D also incorporates five intakes, but the rest of the alignment is identical to that of Alternative 4. Similar to Alternative 5, Alternative 5A incorporates only one intake, but the rest of the alignment is identical to that of Alternative 4. The impact analyses of these alternatives rely on GIS data from DWR that incorporates the recent revisions to the alignment of water conveyance features and associated lands required for construction.

The RDEIR/SDEIS reflects changes made to the conservation measures, environmental commitments, and AMMs for Alternative 4 and, where applicable, Alternatives 4A, 2D, and 5A. Many of the conservation measures from the Draft EIR/EIS became environmental commitments in the RDEIR/SDEIS for Alternatives 4A, 2D, and 5A. These revisions are made to ensure that the conservation measures (in Alternative 4), or environmental commitments in Alternatives 4A, 2D, and 5A, are described consistently where needed in the RDEIR/SDEIS and reflect additional detail that may have been developed since publication of the Draft BDCP, such as updated acreages for mitigation measures. A discussion of the conservation measures and AMMs that have been substantively changed and that would potentially affect the characterization of impacts can be found in Appendix D.

ES.3.6 Analysis of Geotechnical Investigations

Section 2.5, *Analysis of Geotechnical Investigations*, provides an explanation about the method for incorporating analyses of geotechnical investigations into the analysis of the water conveyance facilities construction.

ES.3.6.1 Summary of Analyses and Results

As described in Appendix 3B, *Environmental Commitments*, in Appendix A of this RDEIR/SDEIS, DWR will perform a series of geotechnical investigations along both the selected water conveyance alignment and at locations proposed for facilities or material borrow areas. The work to be performed will constitute a subsurface investigation program to provide information required to support the design and construction of the water conveyance facilities. Geotechnical investigations will be conducted to identify surface and subsurface conditions as necessary to complete design of the water conveyance facilities.

Following publication of the Draft EIR/EIS, DWR developed a Draft Geotechnical Exploration Plan (Phase 2) for the Alternative 4 conveyance alignment. The geotechnical investigation plan provides additional details regarding the rationale, investigation methods and locations, and criteria for obtaining subsurface soil information and laboratory test data (California Department of Water Resources 2014). The proposed exploration is designed as a two-part program (Phases 2a and 2b) to collect geotechnical data relevant to engineering issues associated with conveyance facility construction (as opposed to learning more about the environmental impacts of those facilities). The two-part program will allow refinement of the second part of the program to respond to findings from the first part.

Because this new information allows for a more detailed assessment of the potential environmental effects resulting from geotechnical investigations than that which appeared in Chapter 31 of the Draft EIR/EIS, the activities described in the geotechnical plan have been incorporated into the revised impact analysis for Alternative 4 and the analysis of Alternatives 4A, 2D, and 5A in this RDEIR/SDEIS (see Section 3, *Alternative 4: Conveyance Facility Modifications*, for a description of other revisions to facility design and Appendix A for revised Draft EIR/EIS text).

ES.3.7 Revisions to Cumulative Impact Analyses

ES.3.7.1 Summary of Analyses and Results

In response to comments raised by key stakeholders during the public comment period, and in light of changes that have occurred over time in project landscapes and the availability of new information since the 2009 release of the Notice of Preparation and the 2011 commencement of the extensive amounts of modeling undertaken for the Draft EIR/EIS, the cumulative analysis presented in the Draft EIR/EIS has been revised.

CEQA Guidelines Section 15130 requires the consideration of cumulative impacts within an EIR when a proposed project's incremental contribution to a larger universe of significant cumulative effects from multiple projects is itself "cumulatively considerable." "Cumulatively considerable" means that "the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (CEQA Guidelines, § 15065[a][3]). A similar requirement to examine cumulative impacts exists for NEPA documents, and is required by Council on Environmental Quality (CEQ) regulations (CEQ 1987). Section 5 of this RDEIR/SDEIS updates and revises the cumulative impacts analysis presented in the Draft EIR/EIS; it also adds a discussion of the cumulative impacts associated with Alternatives 4A, 2D, and 5A.

Section 5 breaks the cumulative analysis into two separate pieces which build upon each other. First, Section 5.2.1 examines concurrent project effects, considering potential additive effects of project components that are constructed during the same time period. Then, Section 5.2.2 describes the revisions to the cumulative analysis under each resource topic and the effects of these revisions on the cumulative impact analysis when considered in concert with the effects of the project effects described in Section 5.2.1. References have been made to specific sections of the chapters that have been revised. Analyses of the cumulative impacts for Alternatives 4A, 2D, and 5A are also included.

Table 5.2.1-1 in Section 5 of this RDEIR/SDEIS provides a summary of the potential interim implementation actions that could be implemented concurrently during the conveyance facility construction period as early implementation actions under CM2–CM11. The concurrent project analysis was included to ensure that the total combined impacts of the conveyance facility and other BDCP conservation measures (such as restoration actions scheduled to occur during conveyance facility construction) were fully evaluated in this RDEIR/SDEIS. Alternatives 4A, 2D, and 5A would not be expected to have the same magnitude of concurrent effects as other alternatives because habitat environmental commitments proposed under the new alternatives are limited to actions needed to offset effects of the conveyance facilities.

Proposed future projects that have since become more defined or developed since 2011 have been addressed in the revised cumulative impact analysis as appropriate in either a qualitative or quantitative fashion. The California Water Action Plan, California EcoRestore, and the Sustainable Groundwater Management Act are included in this list of interim implementation projects. For a complete list of such projects, consult Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative*, and *Cumulative Impact Conditions*, in Appendix A of the RDEIR/SDEIS.

ES.4 Mitigation and Adaptive Management

ES.4.1 Mitigation Measures, Avoidance and Minimization Measures, and Environmental Commitments

This RDEIR/SDEIS presents the impacts of the action alternatives and incorporates a variety of methods to reduce adverse/significant impacts on the physical and human environment whenever it is feasible to do so. The methods used to reduce impacts include: 1) modification of project designs and construction assumptions to avoid or reduce potential project impacts, 2) incorporation of environmental commitments, AMMs and CMs into action alternatives, 3)application of additional mitigation measures to reduce alternative effects, and 4) use of a collaborative science, monitoring and adaptive management approach to address uncertainties and adjust project implementation as needed to avoid or reduce impacts. The following provides a summary of these methods used to reduce or avoid environmental effects with references to the various locations in the RDEIR/SDEIS.

ES.4.1.1 Project Definition and Design of Project Elements

This RDEIR/SDEIS includes analyses that reflect modification of the conveyance facility designs for Alternative 4, and the additional sub-alternatives 4A, 2D, and 5A. Design revisions were made to improve the constructability of the proposed conveyance facilities, reduce impacts on sensitive species and resources, avoid and reduce effects on private property owners, and reduce

construction costs. Some of the ways in which environmental effects have been reduced with new facility designs include:

- Reducing visual and aesthetic resource and land use impacts related to north Delta diversion intake pumping plants near the Sacramento River by consolidating and relocating the plants to Clifton Court Forebay.
- Eliminating the realignment of SR 160 at the north Delta diversion intake sites to reduce wetland/riparian impacts and effects on the Stone Lakes National Wildlife Refuge.
- Moving tunnel launch shaft sites off of Staten Island to reduce effects on greater sandhill cranes and their habitat.
- Changing the location of permanent electric transmission lines to reduce potential effects on bird species and aesthetic and visual resources effects.
- Consolidating reusable tunnel material disposal sites to use more State owned property and reduce potential agricultural effects.
- Changing the tunnel alignment to terminate at the Northeast portion of Clifton Court Forebay on State owned property.

Additionally, the new sub-alternatives are also defined to reduce the land use changes and agricultural land conversion associated with natural community restoration and protections needed to offset conveyance facility effects. Please refer to Section 3, *Conveyance Facility Modifications to Alternative 4* and Section 4, *New Alternatives: Alternatives 4A, 2D, and 5A* for an overview of the conveyance facility construction design changes.

ES.4.1.2 Environmental Commitments, AMM's and Conservation Measures

This RDEIR/SDEIS also includes environmental commitments and AMMs that are Best Management Practices and other actions that have been incorporated into the action alternatives to avoid and reduce potential environmental impacts. CMs which are part of BDCP Alternatives 1A–9 (including the modified Alternative 4 presented in this RDEIR/SDEIS) are intended to offset the biological effects of the alternatives and establish a strategy to improve conditions for covered species. These commitments, AMMs and CMs are distinguished from mitigation measures in that they are commitments built into the definition of the action alternatives as compared to mitigation measures which are recommended to reduce adverse or significant environmental impacts. For the new sub-alternatives 4A, 2D, and 5A, environmental commitments are also included in the project definition to distinguish habitat and other project components that have been modified from conservation measures presented for BDCP Alternatives 1A–9 in the Draft EIR/EIS. All of the environmental commitments and summaries of the AMMs are presented in Appendix 3B, *Environmental Commitments, AMMs and CMs* in RDEIR/SDEIS Appendix A, along with a discussion of how the actions would be effective at reducing various environmental effects.

ES.4.1.3 Mitigation Measures

To meet the requirements of CEQA and NEPA, mitigation measures are recommended in this RDEIR/SDEIS to reduce significant or adverse impacts of the action alternatives to the extent possible. Mitigation measures are recommended when the project design, environmental commitments, AMMs and CMs are not sufficient to reduce impacts or when these project measures

are not relevant to a particular impact. In many cases mitigation measures are recommended to reduce the construction effects of conveyance facilities on resources located within the conveyance facility alignments. For example, impacts on agriculture, recreation, aesthetics and visual resources, and cultural resources that occur within conveyance facility alignments are identified as significant impacts for which mitigation measures are recommended to reduce the impacts. In other cases, mitigation measures are proposed to reduce impacts of the conveyance facilities on sensitive receptors or infrastructure such as in the case of air quality, noise, transportation and public services impacts. Although many of the operational effects of the conveyance facilities have been reduced by design of the facility operational criteria and rules, which reflect state and federal requirements of SWP/CVP operation, additional mitigation measures are included for some of the water quality and fish and aquatic resources impacts. In a number of cases significant impacts are identified for CEQA purposes that cannot be fully mitigated to a less-than-significant level. In all of these cases, mitigation measures are recommend to attempt to reduce the potential impact to the greatest extent possible.

Please refer to Table ES-9, Summary of BDCP/California WaterFix RDEIR/SDEIS Impacts and Mitigation Measures for a detailed summary of all of the impacts and mitigation measures included in the RDEIR/SDEIS. Full text of the mitigation measures are included by reference and presented in Appendix A and the Draft EIR/EIS.

ES.4.2 Collaborative Science and Adaptive Management Program

Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, CDFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive management. For the purposes of analysis, it is assumed that the Adaptive Management and Monitoring Plan (AMMP) developed for Alternative 4A would not, by itself, create nor contribute to any new significant environmental effects; instead, the AMMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 4A.

Collaborative science and adaptive management will support the proposed project by helping to address scientific uncertainty where it exists, and as it relates to the benefits and impacts of the construction and operations of the new water conveyance facility and existing CVP and SWP facilities. Specifically, collaborative science and adaptive management will, as appropriate, develop and use new information and insight gained during the course of project construction and operation to inform and improve:

- the design of fish facilities including the intake fish screens;
- the operation of the water conveyance facilities under the Section 7 biological opinion and 2081(b) permit; and
- habitat restoration and other mitigation measures conducted under the biological opinions and 2081(b) permits.

In summary, the broad purposes of the program will be to: (1) undertake collaborative science, (2) guide the development and implementation of scientific investigations and monitoring for both

permit compliance and adaptive management, and (3) apply new information and insights to management decisions and actions. Each purpose is further described below.

Collaborative Science

The program will provide guidance and recommendations on relevant science related to the operations of the CVP and SWP within the Delta to inform implementation of the existing BiOps for the coordinated operations of the SWP and CVP and the 2081(b) permit for the SWP facilities and operations, as well as for the new biological opinion and 2081(b) for this proposed project. The collaborative science effort will build on the progress being made by the existing Collaborative Science and Adaptive Management Program (CSAMP) that was established to make recommendations on the science needed to inform implementation of or potential changes to the existing BiOps for the SWP and CVP operations, and proposed alternative management actions. The CSAMP process and its Collaborative Adaptive Management Team (CAMT) rely on the Delta Science Program to provide independent peer review of both science proposals and products.

Results from the collaborative science produced under the program would inform policy makers from the agencies implementing or overseeing the proposed project. These policy makers would determine whether and how to act on the information within the regulatory contexts of the biological opinions, 2081(b) permits, and other relevant authorizations (e.g., Corps permits, State Board authorizations).

Monitoring

Monitoring is a critical element of the adaptive management program and a required component of ESA Section 7 biological opinions and CESA 2081(b) permits. In addition, monitoring is a critical element of the collaborative science process that informs adaptive management decision-making. The proposed compliance and effectiveness monitoring program for the CESA 2081(b) permit is described in Chapter 6 of that permit application. These monitoring programs overlap but have distinct elements owing to their overlapping but distinct species lists.

Management Recommendations, Decisions, and Actions

The collaborative science effort is expected to inform operational decisions within the ranges established by the biological opinion and 2081(b) permit for the proposed project. However, if new science suggests that operational changes may be appropriate that fall outside of the operational ranges evaluated in the biological opinion and authorized by the 2081(b) permit, the appropriate agencies will determine whether those changes should be implemented. An analysis of the biological effects of any such changes will be conducted to determine if those effects fall within the range of effects analyzed and authorized under the biological opinion and 2081(b) permit. If NMFS, USFWS, or CDFW determine that impacts to listed species are greater than those analyzed and authorized under the biological opinion and 2081(b) permit, consultation may need to be reinitiated and/or the permittees may need to seek a 2081(b) permit amendment. Likewise, in the unlikely event analysis shows that impacts to water supply are greater than those analyzed in this EIR/EIS, it may be necessary to complete additional environmental review to comply with CEQA or NEPA.

The collaborative science process will also inform the design and construction of the fish screens on the new intakes. This requires active study to maximize water supply, ensure flexibility in their design and operation, and minimize effects to covered species. The collaborative science process

will similarly inform adaptive management of habitat restoration and other mitigation measures required by the existing and new biological opinion and 2081(b) permit.

Structure of Collaborative Science

The collaborative science elements of the program will build on the experience gained in the CSAMP process, Collaborative science for the proposed project is expected to follow a similar organizational model in which management decisions are made by the appropriate agencies within their authorities and collaborative science is undertaken by managers and scientists from participating entities, and other stakeholders as will be described in the Memorandum of Agreement (MOA) between DWR, Reclamation, the public water agencies, CDFW, NMFS, and USFWS. In keeping with the existing CSAMP model, future members of the collaborative science process will have expertise or technical skills that would enable them to contribute to the tasks outlined above. Membership from each group will be limited to maintain the effectiveness of the group. Other senior scientists may be invited to participate by mutual consent. If useful, the group could form technical subgroups or use existing subgroups to inform its work. Decisions about what science to pursue would be made by consensus. The group will integrate the work of relevant existing groups and processes (e.g., Delta Science Program and Interagency Ecological Program) to avoid duplicating work.

Funding for collaborative science and monitoring will be implemented, when feasible, using existing resources from state, federal, and other programs, and the mitigation program of the water conveyance facility. The mitigation program has money dedicated to the monitoring necessary to support effective implementation of mitigation actions. Proponents of the collaborative science and monitoring program will agree to provide or seek additional funding when existing resources are insufficient. The budget will be based on annual workplans. The proponents also will ensure the availability of funding for monitoring and the requirements defined in the biological opinion and 2081(b) permit.

Scientific Basis for Adaptive Management

Adaptive management is a systematic process to continually improve management policies and practices by learning from our actions (Holling 1978; Walters 1986). It requires well-articulated management objectives to guide decisions about what science to try, and explicit assumptions about expected outcomes to compare against actual outcomes (Williams et al. 2009). Adaptive management uses a process to clearly articulate objectives, identify management alternatives, predict management consequences, recognize key uncertainties in advance, and monitor and evaluate outcomes. This structured and systematic process is what differentiates adaptive management from a trial and error approach (National Research Council 2004a; Williams 2011a). Learning, facilitated through deliberate design and testing, is an integral component of adaptive management (Williams et al. 2009; Allen et al. 2011; Williams 2011a).

Adaptive management is a particularly useful framework in the face of scientific uncertainty. The principles of adaptive management lend themselves to water management and ecological restoration in the Bay-Delta (CALFED Bay-Delta Program 2000; Reed et al. 2007, 2010; Healey 2008; Dahm et al. 2009; National Research Council 2011; Parker et al. 2011, 2012; Delta Stewardship Council 2013). In particular, a National Research Council (2011) panel found that despite the challenges, there often is no better option for implementing water management regimes. The adaptive management program for the proposed project will be designed and implemented with these principals and scientific guidance in mind.

ES.5 Summary of Impacts

Table ES-9, Summary of BDCP/California WaterFix RDEIR/SDEIS Impacts and Mitigation Measures summarizes, by resource area, the environmental impacts of implementing Alternatives 4, 4A, 2D, and 5A. NEPA and CEQA impact conclusions are provided for all of the impacts presented in this RDEIR/SDEIS and mitigation measures are identified that if implemented would reduce impacts. The impact conclusions after mitigation measures are applied are also summarized.

Table ES-9. Summary of BDCP/California WaterFix RDEIR/SDEIS Impacts and Mitigation Measures

Notes:

1. These conclusions reflect implementation of Environmental Commitments 3, 4, 6–12, 15 and 16 (as described in Section 4.1 of the RDEIR/SDEIS), and Avoidance and Minimization Measures (described in detail in the Appendix 3C of the BDCP and in Appendix D of the RDEIR/SDEIS), which are considered a part of each action alternative. In some cases, mitigation measures proposed under one resource section (e.g., terrestrial biological resources) are also proposed to reduce effects on another resource topic (e.g., recreation). These mitigation measures are cross-referenced wherever they may reduce effects. Additional discussion of each effect and mitigation measure can be found under the referenced resource-specific chapter(s).
2. While many impact headers (see "Potential Impact" column) describe specific effects associated with BDCP action alternatives (e.g., the effects of implementing one or more conservation measures proposed as part of the BDCP), the conclusions provided for No Action Alternative (NAA) represent the anticipated effects on a resource as a result of future conditions in the absence of BDCP implementation. For the EIR/EIS analysis, the No Action Alternative assumptions are described in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*.
3. The names of some of the numbered impacts have been slightly modified in the text to more accurately reflect the impacts resulting from implementing Alternatives 4A, 2D, or 5A. Although names of some of these impacts have been modified, the impact number sequence remains accurate as are the findings shown in this table. The impact names in the table reflect the same as what was shown in the DEIR/SEIS.
4. Impacts which refer to conservation measures (from the Draft EIR/S) correspond to identically numbered Environmental Commitments for Alternatives 4A, 2D, and 5A in the Recirculated Draft EIR/Supplemental EIS. (For more information, see Section 4.1 in the RDEIR/SDEIS.)

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Water Supply					
WS-1: Changes in SWP/CVP water deliveries during construction	NAA, 2D, 4, 4A, 5A	NI		NI	NE
WS-2: Change in SWP and CVP deliveries	NAA, 2D, 4, 4A, 5A	N/A[1]		N/A	N/A
WS-3: Effects of water transfers on water supply	NAA, 2D, 4, 4A, 5A	N/A[2]		N/A	N/A
Surface Water					
SW-1: Changes in SWP or CVP reservoir flood storage capacity	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
SW-2: Changes in Sacramento and San Joaquin River flood flows	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
SW-3: Change in reverse flow conditions in Old and Middle Rivers	NAA, 2D, 4, 4A, 5A	ND		ND	ND
SW-4: Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner that would result in flooding during construction of conveyance facilities	NAA, 2D, 4, 4A, 5A	S	SW-4: Implement measures to reduce runoff and sedimentation	LTS	NA
SW-5: Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner that would result in flooding during construction of habitat restoration area facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	SW-4: Implement measures to reduce runoff and sedimentation	LTS	NA

[1] Findings were not made for these due to the approach in this analysis.

[2] Findings were not made for these due to the approach in this analysis.

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
SW-6: Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	SW-4: Implement measures to reduce runoff and sedimentation	LTS	NA
SW-7: Expose people or structures to a significant risk of loss, injury or death involving flooding due to the construction of new conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	SW-7: Implement Measures to Reduce Flood Damage	LTS	NA
SW-8: Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding due to habitat restoration	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	SW-8: Implement measures to address potential wind fetch issues	LTS	NA
SW-9: Place within a 100-year flood hazard area structures which would impede or redirect flood flows, or be subject to inundation by mudflow	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	SW-4: Implement measures to reduce runoff and sedimentation	LTS	NA
Groundwater					
Changes in Central and South Delta flow	NAA (ELT)	NI		NI	NE
Changes in Delta Groundwater Levels[3]	NAA (ELT)	NI		NI	NE[4]
Changes in Delta Groundwater Quality[1,]	NAA (ELT)	LTS		LTS	NA
Changes in Delta Agricultural Drainage[1]	NAA (ELT)	LTS		NI	NE
San Joaquin Basin Groundwater Levels[5]	NAA (ELT)	S		S	A
Tulare Basin Groundwater Levels[3]	NAA (ELT)	S		S	A
Tulare Basin Groundwater Flow[3]	NAA (ELT)	LTS		LTS	NA
San Joaquin and Tulare Basin Land Subsidence[3]	NAA (ELT)	LTS		LTS	NA
Other Portions of the Export Service Areas–Groundwater supplies, recharge, and local groundwater table levels	NAA (ELT)	S		S	A
Ongoing Plans, Policies, and Programs	NAA (ELT)	LTS		LTS	NA
GW-1: During construction, deplete groundwater supplies or interfere with groundwater recharge, alter local groundwater levels, or reduce the production capacity of preexisting nearby wells	2D, 4, 4A, 5A	S	GW-1: Maintain water supplies in areas affected by construction dewatering	SU	A
GW-2: During operations, deplete groundwater supplies or interfere with groundwater recharge, alter local groundwater levels, or reduce the production capacity of preexisting nearby wells	2D, 4, 4A, 5A	LTS		LTS	NA

[3] Includes effects of climate change and sea level rise at 2060 (2025 for REIR/S)
[4] Increased groundwater level due to sea level rise in San Francisco Bay may result in a beneficial effect on shallow well yields
[5] SWP/CVP Export Service Areas

Level of Significance/Determination of Effects:

CEQA				**NEPA**		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant	NI=no impact	ND=no determination	A=adverse	NE=no effect	ND=no determination
	S=significant	B=beneficial	N/A=not applicable	NA=not adverse	B=beneficial	N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
GW-3: Degrade groundwater quality during construction and operation of conveyance facilities	2D, 4, 4A, 5A	LTS		LTS	NA
GW-4: During construction of conveyance facilities, interfere with agricultural drainage in the Delta	2D, 4, 4A, 5A	LTS		LTS	NA
GW-5: During operations of new facilities, interfere with agricultural drainage in the Delta	2D, 4, 4A, 5A	S	GW-5: Agricultural lands seepage minimization	SU	A
GW-6: Deplete groundwater supplies or interfere with groundwater recharge, alter local groundwater levels, reduce the production capacity of preexisting nearby wells, or interfere with agricultural drainage as a result of implementing CM2–CM22	2D, 4, 4A, 5A	S	GW-5: Agricultural lands seepage minimization	SU	A
GW-7: Degrade groundwater quality as a result of implementing CM2–CM22	2D, 4, 4A, 5A	S	GW-7: Provide an alternate source of water	SU	A
GW-8: During operations, deplete groundwater supplies or interfere with groundwater recharge, alter groundwater levels, or reduce the production capacity of preexisting nearby wells	2D, 4A, 5A	LTS[6]		LTS	B
	4, 6A, 6B, 6C, 7, 8, 9	S	No feasible mitigation to address this impact	SU	A
GW-9: Degrade groundwater quality	2D, 4, 4A, 5A	LTS[7]		LTS	NA
GW-10: Result in groundwater level-induced land subsidence	2D, 4, 4A, 5A	LTS		LTS	NA
Water Quality					
WQ-1: Effects on ammonia concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-2: Effects on ammonia concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-3: Effects on boron concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-4: Effects on boron concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-5: Effects on bromide concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-6: Effects on bromide concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-7: Effects on chloride concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-8: Effects on chloride concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA

[6] For Alternative 4A, the impact could be significant/adverse in certain areas of Southern California depending on the range of Spring Delta outflows that affect the surface water deliveries and associated groundwater usage.
[7] For Alternative 4A, the impact could be significant/adverse, as related to impact GW-8

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
WQ-9: Effects on dissolved oxygen resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-10: Effects on dissolved oxygen resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-11: Effects on electrical conductivity concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	S	WQ-11: Avoid or Minimize Reduced Water Quality Conditions WQ-11a: Adaptively Manage Diversions at the North and South Delta Intakes to Reduce or Eliminate Water Quality Degradation in Western Delta. WQ-11b: Adaptively Manage Head of Old River Barrier and Diversions at the North and South Delta Intakes to Reduce or Eliminate Exceedances of the Bay-Delta WQCP Objective at Prisoners Point.	LTS	NA
WQ-12: Effects on electrical conductivity concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-13: Effects on mercury concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-14: Effects on mercury concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	S	No available mitigation to address this impact	SU	A
WQ-15: Effects on nitrate concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-16: Effects on nitrate concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-17: Effects on organic carbon concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-18: Effects on organic carbon concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-19: Effects on pathogens resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-20: Effects on pathogens resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-21: Effects on pesticide concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-22: Effects on pesticide concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-23: Effects on phosphorus concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-24: Effects on phosphorus concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
WQ-25: Effects on selenium concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-26: Effects on selenium concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-27: Effects on trace metal concentrations resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-28: Effects on trace metal concentrations resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-29: Effects on TSS and turbidity resulting from facilities operations and maintenance (CM1)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-30: Effects on TSS and turbidity resulting from implementation of CM2–CM22	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-31: Water quality impacts resulting from construction-related activities (CM1–CM22)	2D, 4, 4A, 5A	LTS		LTS	NA
WQ-32: Effects on Microcystis Bloom Formation Resulting from Facilities Operations and Maintenance (CM1).	1A-2C, 3, 4, 5, 6A-9	S	WQ-32a: Design Restoration Sites to Reduce Potential for Increased Microcystis Blooms WQ-32b: Investigate and Implement Operational Measures to Manage Water Residence Time	SU	A
	2D, 4A, 5A	LTS		LTS	NA
WQ-33: Effects on Microcystis Bloom Formation Resulting from Other Conservation Measures (CM2–CM21).	1A-2C, 3, 4, 5, 6A-9	S	No available mitigation to address this impact	SU	A
	2D, 4A, 5A	LTS		LTS	NA
WQ-34: Effects on San Francisco Bay Water Quality Resulting from Facilities Operations and Maintenance (CM1) and Implementation of CM2–CM21	1A-9	LTS		LTS	NA
Geology and Seismicity					
GEO-1: Loss of property, personal injury, or death from structural failure resulting from strong seismic shaking of water conveyance features during construction	NAA	NI		NI	NA
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-2: Loss of property, personal injury, or death from settlement or collapse caused by dewatering during construction of water conveyance features	NAA	NI		NI	NA
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-3: Loss of property, personal injury, or death from ground settlement during construction of water conveyance features	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-4: Loss of property, personal injury, or death from slope failure during construction of water conveyance features	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
GEO-5: Loss of property, personal injury, or death from structural failure resulting from construction-related ground motions during construction of water conveyance features	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-6: Loss of property, personal injury, or death from structural failure resulting from rupture of a known earthquake fault during operation of water conveyance features	NAA	NI		NI	NE
	2D, 4, 4A, 5A	NI		NI	NE
GEO-7: Loss of property, personal injury, or death from structural failure resulting from strong seismic shaking during operation of water conveyance features	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-8: Loss of property, personal injury, or death from structural failure resulting from seismic-related ground failure (including liquefaction) during operation of water conveyance features	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-9: Loss of property, personal injury, or death from landslides and other slope instability during operation of water conveyance features	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-10: Loss of property, personal injury, or death from seiche or tsunami during operation of water conveyance features	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-11: Ground failure caused by increased groundwater surface elevations from unlined canal seepage as a result of operating the water conveyance facilities	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-12: Loss of property, personal injury, or death resulting from structural failure caused by rupture of a known earthquake fault at Restoration Opportunity Areas	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-13: Loss of property, personal injury, or death from structural failure resulting from strong seismic shaking at Restoration Opportunity Areas	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-14: Loss of property, personal injury, or death from structural failure resulting from seismic-related ground failure (including liquefaction) beneath Restoration Opportunity Areas	NAA	NI		NI	NE
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-15: Loss of property, personal injury, or death from landslides and other slope instability at Restoration Opportunity Areas	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA
GEO-16: Loss of property, personal injury, or death from seiche or tsunami at Restoration Opportunity Areas as a result of implementing the conservation actions	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA
Soils					
SOILS-1: Accelerated erosion caused by vegetation removal and other soil disturbances as a result of constructing the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
SOILS-2: Loss of topsoil from excavation, overcovering, and inundation as a result of constructing the proposed water conveyance facilities	NAA	S		S	A
	2D, 4, 4A, 5A	S	SOILS-2a: Minimize extent of excavation and soil disturbance SOILS-2b: Salvage, stockpile, and replace topsoil and prepare a topsoil storage and handling plan	SU	A
SOILS-3: Property loss, personal injury, or death from instability, failure, and damage from construction on or in soils subject to subsidence as a result of constructing the proposed water conveyance facilities	NAA	S		S	A
	2D, 4, 4A, 5A	LTS		LTS	NA
SOILS-4: Risk to life and property as a result of constructing the proposed water conveyance facilities in areas of expansive, corrosive, and compressible soils	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
SOILS-5: Accelerated bank erosion from increased channel flow rates as a result of operations	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
SOILS-6: Accelerated erosion caused by clearing, grubbing, grading, and other disturbances associated with implementation of proposed Environmental Commitments 3, 4, and 6–11	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
SOILS-7: Loss of topsoil from excavation, overcovering, and inundation associated with restoration activities as a result of implementing the proposed Environmental Commitments 3, 4, and 6–11	NAA	S		S	A
	2D, 4, 4A, 5A	S	SOILS-2a: Minimize extent of excavation and soil disturbance SOILS-2b: Salvage, stockpile, and replace topsoil and prepare a topsoil storage and handling plan	SU	A
SOILS-8: Property loss, personal injury, or death from instability, failure, and damage from construction on soils subject to subsidence as a result of implementing the proposed Environmental Commitments 3, 4, and 6–11	NAA	B		B	B
	2D, 4, 4A, 5A	LTS		LTS	NA
SOILS-9: Risk to life and property from construction in areas of expansive, corrosive, and compressible soils as a result of implementing the proposed Environmental Commitments 3, 4, and 6–11	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
Fish and Aquatic Resources					
AQUA-NAA1: Effects of construction of facilities on covered fish species	NAA	LTS		LTS	NA
AQUA-NAA2: Effects of maintenance of facilities on covered fish species	NAA	LTS		LTS	NA
AQUA-NAA3: Effects of water operations on entrainment of covered fish species	NAA	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-NAA4: Effects of water operations on spawning and egg incubation habitat for covered fish species	NAA	LTS S (winter-run Chinook salmon and green sturgeon)	No feasible mitigation to address this impact on Chinook salmon	SU	A (winter-run Chinook salmon and green sturgeon)
AQUA-NAA5: effects of water operations on rearing habitat for covered fish species	NAA	S		S	NA
AQUA-NAA6: Effects of water operations on migration habitat for covered fish species	NAA	LTS		LTS	NA
AQUA-NAA7: Effects of habitat restoration on covered fish species	NAA	LTS		LTS	NA
AQUA-NAA8: Effects of other Conservation Measures on covered fish species	NAA	LTS		LTS	B
AQUA-NAA9: Effects of construction of facilities on non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA10: Effects of maintenance of facilities on non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA11: Effects of water operations on entrainment of non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA12: Effects of water operations on spawning and egg incubation habitat for non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA13: Effects of water operations on rearing habitat for non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA14: Effects of water operations on migration habitat for non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA15: Effects of habitat restoration on non-covered fish species	NAA	LTS		LTS	NA
AQUA-NAA16: Effects of other Conservation Measures on non-covered fish species	NAA	LTS		LTS	B
AQUA-1: Effects of construction of water conveyance facilities on delta smelt	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-2: Effects of maintenance of water conveyance facilities on delta smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-3: Effects of water operations on entrainment of delta smelt					
	2D, 4, 4A	LTS		LTS	B
	5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-4: Effects of water operations on spawning and egg incubation habitat for delta smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-5: Effects of water operations on rearing habitat for delta smelt	4, 4A	LTS		LTS	NE
	1A, 1B, 1C, 3	LTS		LTS	A
	2A, 2B, 2C, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 5A	LTS		LTS	NA
AQUA-6: Effects of water operations on migration conditions for delta smelt	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-7: Effects of construction of restoration measures on delta smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-8: Effects of contaminants associated with restoration	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-9: Effects of restored habitat conditions on delta smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-10: Effects of methylmercury management on delta smelt (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-13: Effects of localized reduction of predatory fish on delta smelt (CM15)	2D, 4, 4A, 5A	NI		NI	NE
AQUA-14: Effects of nonphysical fish barriers on delta smelt (CM16)	4, 4A	LTS		LTS	NE
	2D, 5A	LTS		LTS	NA
AQUA-19: Effects of construction of water conveyance facilities on longfin smelt	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-20: Effects of maintenance of water conveyance facilities on longfin smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-21: Effects of water operations on entrainment of longfin smelt	4, 4A, 5A	B		B	NA
	2D	B		B	B

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-22: Effects of water operations on spawning, egg incubation, and rearing habitat for longfin smelt	4, 4A	S	AQUA-22D: Ensure January though June Delta outflows do not result in changes in longfin smelt abundance	LTS	NA
	5A	S	AQUA-22a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to longfin smelt to determine feasibility of mitigation to reduce impacts to spawning and rearing habitat AQUA-22b: Conduct additional evaluation and modeling of impacts on longfin smelt rearing habitat following initial operations of water conveyance facilities AQUA-22c: Consult with USFWS and CDFW to identify and implement feasible means to minimize effects on longfin smelt rearing habitat consistent with water conveyance facilities	S	A
	2D	S	AQUA-22a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to longfin smelt to determine feasibility of mitigation to reduce impacts to spawning and rearing habitat AQUA-22b: Conduct additional evaluation and modeling of impacts on longfin smelt rearing habitat following initial operations of water conveyance facilities AQUA-22c: Consult with USFWS and CDFW to identify and implement feasible means to minimize effects on longfin smelt rearing habitat consistent with water conveyance facilities	S	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9	LTS		LTS	NA
AQUA-25: Effects of construction of restoration measures on longfin smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-26: Effects of contaminants associated with restoration measures on longfin smelt	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4A, 5A	LTS		LTS	NA
AQUA-27: Effects of restored habitat conditions on longfin smelt	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-28: Effects of methylmercury management on longfin smelt (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-31: Effects of localized reduction of predatory fish on longfin smelt (CM15)	2D, 4, 4A, 5A	NI		NI	NE
AQUA-32: Effects of nonphysical fish barriers on longfin smelt (CM16)	4, 4A	NI		NI	NE
	2D, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-37: Effects of construction of water conveyance facilities on Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-38: Effects of maintenance of water conveyance facilities on Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-39: Effects of water operations on entrainment of Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	B		B	B
AQUA-40: Effects of water operations on spawning and egg incubation habitat for Chinook salmon (winter-run ESU)	4, 4A, 5A, 7	LTS		LTS	NA
	2D	S	AQUA-40a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to winter-run Chinook salmon to determine feasibility of mitigation to reduce impacts to spawning habitat AQUA-40b: Conduct additional evaluation and modeling of impacts on winter-run Chinook salmon spawning habitat following initial operations of water conveyance facilities AQUA-40c: Consult with NMFS, USFWS, and CDFW to identify and implement potentially feasible means to minimize effects on winter-run Chinook salmon spawning habitat consistent with water conveyance facilities	S	NA
	3	S		S	A
AQUA-41: Effects of water operations on rearing habitat for Chinook salmon (winter-run ESU)	2A, 2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-42: Effects of water operations on migration conditions for Chinook salmon (winter-run ESU)	4, 5, 7, 4A, 5A	LTS		LTS	NA
	2D	S	AQUA-42a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to winter-run Chinook salmon to determine feasibility of mitigation to reduce impacts to migration conditions AQUA-42b: Conduct additional evaluation and modeling of impacts on winter-run Chinook salmon migration conditions following initial operations of water conveyance facilities AQUA-42c: Consult with NMFS and CDFW to identify and implement potentially feasible means to minimize effects on winter-run Chinook salmon migration conditions consistent with water conveyance facilities operations	S	A

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 8, 9	LTS		LTS	NA/B[8]
AQUA-43: Effects of construction of restoration measures on Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-44: Effects of contaminants associated with restoration measures on Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-45: Effects of restored habitat conditions on Chinook salmon (winter-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-46: Effects of methylmercury management on Chinook salmon (winter-run ESU) (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-49: Effects of localized reduction of predatory fish on Chinook salmon (winter-run ESU) (CM15)	2D, 4, 4A, 5A	NI		NI	NE
AQUA-50: Effects of nonphysical fish barriers on Chinook salmon (winter-run ESU) (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-55: Effects of construction of water conveyance facilities on Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-56: Effects of maintenance of water conveyance facilities on Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-57: Effects of water operations on entrainment of Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-58: Effects of water operations on spawning and egg incubation habitat for Chinook salmon (spring-run ESU)	2A, 2B, 2C, 4, 5, 7, 2D, 4A, 5A	LTS		LTS	NA
AQUA-59: Effects of water operations on rearing habitat for Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NE

[8] The effects of short-term restoration construction activities would not be adverse; the overall long-term effects of habitat restoration are expected to be beneficial to winter-run Chinook salmon and other covered species by providing additional or improved habitat.

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-60: Effects of water operations on migration conditions for Chinook salmon (spring-run ESU)	4, 4A, 5A, 3, 5, 7	LTS		LTS	NA
	2D	S	AQUA-60a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to spring-run Chinook salmon to determine feasibility of mitigation to reduce impacts to migration conditions AQUA-60b: Conduct additional evaluation and modeling of impacts on spring-run Chinook salmon migration conditions following initial operations of water conveyance facilities AQUA-60c: Consult with NMFS and CDFW to identify and implement potentially feasible means to minimize effects on spring-run Chinook salmon migration conditions consistent with water conveyance facilities	S	A
AQUA-61: Effects of construction of restoration measures on Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-62: Effects of contaminants associated with restoration measures on Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-63: Effects of restored habitat conditions on Chinook salmon (spring-run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-64: Effects of methylmercury management on Chinook salmon (spring-run ESU) (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-67: Effects of localized reduction of predatory fish on Chinook salmon (spring-run ESU) (CM15)	2D, 4, 4A, 5A	NI		NI	NE
AQUA-68: Effects of nonphysical fish barriers on Chinook salmon (spring-run ESU) (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-73: Effects of construction of water conveyance facilities on Chinook salmon (fall- and late fall–run ESU)	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-74: Effects of maintenance of water conveyance facilities on Chinook salmon (fall- and late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-75: Effects of water operations on entrainment of Chinook salmon (fall-/late fall–run ESU)	4, 4A, 5A	LTS		LTS	NA
	2D	B		B	NA
	5A	B		B	B
AQUA-76: Effects of water operations on spawning and egg incubation habitat for Chinook salmon (fall- and late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-77: Effects of water operations on rearing habitat for Chinook salmon (fall-/late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-78: Effects of water operations on migration conditions for Chinook salmon (fall-/late fall–run ESU)	4, 4A	S	AQUA-78D: Slightly adjust the timing and magnitude of Shasta, Folsom, and/or Oroville Reservoir releases, within all existing regulations and requirements, to ameliorate changes in instream, slows that would cause an adverse effect to fall-run Chinook salmon	LTS	NA
	2D, 5A	S	AQUA-78a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to fall-/late fall–run Chinook salmon to determine feasibility of mitigation to reduce impacts to migration conditions AQUA-78b: Conduct additional evaluation and modeling of impacts on fall-/late fall–run Chinook salmon migration conditions following initial operations of water conveyance facilities AQUA-78c: Consult with NMFS and CDFW to identify and implement potentially feasible means to minimize effects on fall-/late fall–run Chinook salmon migration conditions consistent with water conveyance facility operations	S	A
	7	LTS		LTS	NA
AQUA-79: Effects of construction of restoration measures on Chinook salmon (fall-/late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-80: Effects of contaminants associated with restoration measures on Chinook salmon (fall-/late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-81: Effects of restored habitat conditions on Chinook salmon (fall-/late fall–run ESU)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-82: Effects of methylmercury management on Chinook salmon (fall-/late fall–run ESU) (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-85: Effects of localized reduction of predatory fish on Chinook salmon (fall-/late fall–run ESU) (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-86: Effects of nonphysical fish barriers on Chinook salmon (fall-/late fall–run ESU) (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-91: Effects of construction of water conveyance facilities on steelhead	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-92: Effects of maintenance of water conveyance facilities on steelhead	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-93: Effects of water operations on entrainment of steelhead	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-94: Effects of water operations on spawning and egg incubation habitat for steelhead	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-95: Effects of water operations on rearing habitat for steelhead	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-96: Effects of water operations on migration conditions for steelhead	3, 4, 5, 7, 4A, 5A	LTS		LTS	NA
	2D	S	AQUA-96a: Following initial operations of water conveyance facilities, conduct additional evaluation and modeling of impacts to steelhead to determine feasibility of mitigation to reduce impact to migration conditions AQUA-96b: Conduct additional evaluation and modeling of impacts on steelhead migration conditions following initial operations of water conveyance facilities AQUA-96c: Consult with NMFS and CDFW to identify and implement potentially feasible means to minimize effects on steelhead migration conditions consistent with water conveyance facility operations	S	A
AQUA-97: Effects of construction of restoration measures on steelhead	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-98: Effects of contaminants associated with restoration measures on steelhead	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 6A, 6B, 6C, 8, 9, 2D, 4A, 5A	LTS		LTS	NA
AQUA-99: Effects of restored habitat conditions on steelhead	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-100: Effects of methylmercury management on steelhead (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-103: Effects of localized reduction of predatory fish on steelhead (CM15)	2D, 4, 4A, 5A	LTS		LTS	NE
AQUA-104: Effects of nonphysical fish barriers on steelhead (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-109: Effects of construction of water conveyance facilities on Sacramento splittail	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-110: Effects of maintenance of water conveyance facilities on Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-111: Effects of water operations on entrainment of Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-112: Effects of water operations on spawning and egg incubation habitat for Sacramento splittail	2D, 4, 4A, 5A	B		B	NE
AQUA-113: Effects of water operations on rearing habitat for Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-114: Effects of water operations on migration conditions for Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-115: Effects of construction of restoration measures on Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-116: Effects of contaminants associated with restoration measures on Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-117: Effects of restored habitat conditions on Sacramento splittail	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-118: Effects of methylmercury management on Sacramento splittail (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-121: Effects of localized reduction of predatory fish on Sacramento splittail (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-122: Effects of nonphysical fish barriers on Sacramento splittail (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-127: Effects of construction of water conveyance facilities on green sturgeon	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-128: Effects of maintenance of water conveyance facilities on green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-129: Effects of water operations on entrainment of green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-130: Effects of water operations on spawning and egg incubation habitat for green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-131: Effects of water operation on rearing habitat for green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-132: Effects of water operations on migration conditions for green sturgeon	4, 5, 6A, 6B, 6C, 7, 9, 2A, 2D, 4A, 5A	LTS		LTS	NA
AQUA-133: Effects of construction of restoration measures on green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-134: Effects of contaminants associated with restoration measures on green sturgeon	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4A, 5A	LTS		LTS	NA
AQUA-135: Effects of restored habitat conditions on green sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-136: Effects of methylmercury management on green sturgeon (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-139: Effects of localized reduction of predatory fish on green sturgeon (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-140: Effects of nonphysical fish barriers on green sturgeon (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-145: Effects of construction of water conveyance facilities on white sturgeon	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-146: Effects of maintenance of water conveyance facilities on white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-147: Effects of water operations on entrainment of white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-148: Effects of water operations on spawning and egg incubation habitat for white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-149: Effects of water operations on rearing habitat for white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-150: Effects of water operations on migration conditions for white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-151: Effects of construction of restoration measures on white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-152: Effects of contaminants associated with restoration measures on white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-153: Effects of restored habitat conditions on white sturgeon	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-154: Effects of methylmercury management on white sturgeon (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-157: Effects of localized reduction of predatory fish on white sturgeon (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-158: Effects of nonphysical fish barriers on white sturgeon (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-163: Effects of construction of water conveyance facilities on Pacific lamprey	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-164: Effects of maintenance of water conveyance facilities on Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-165: Effects of water operations on entrainment of Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-166: Effects of water operations on spawning and egg incubation habitat for Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-167: Effects of water operations on rearing habitat for Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-168: Effects of water operations on migration conditions for Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-169: Effects of construction of restoration measures on Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-170: Effects of contaminants associated with restoration measures on Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-171: Effects of restored habitat conditions on Pacific lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-172: Effects of methylmercury management on Pacific lamprey (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-175: Effects of localized reduction of predatory fish on Pacific lamprey (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-176: Effects of nonphysical fish barriers on Pacific lamprey (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-181: Effects of construction of water conveyance facilities on river lamprey	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-182: Effects of maintenance of water conveyance facilities on river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-183: Effects of water operations on entrainment of river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-184: Effects of water operations on spawning and egg incubation habitat for river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-185: Effects of water operations on rearing habitat for river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-186: Effects of water operations-related decline on migration conditions for river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-187: Effects of construction of restoration measures on river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-188: Effects of contaminants associated with restoration measures on river lamprey	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-189: Effects of restored habitat conditions on river lamprey	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-190: Effects of methylmercury management on river lamprey (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-193: Effects of localized reduction of predatory fish on river lamprey (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-194: Effects of nonphysical fish barriers on river lamprey (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-199: Effects of construction of water conveyance facilities on non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	S (noise associated with pile driving)	AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Monitor underwater noise and if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
AQUA-200: Effects of maintenance of water conveyance facilities on non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-201: Effects of water operations on entrainment of non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	S (striped bass, American shad) LTS (threadfin shad, largemouth bass, Sacramento tule perch, Sacramento San-Joaquin roach, hardhead, and California bay shrimp)		S (striped bass, American shad) LTS (threadfin shad, largemouth bass, Sacramento tule perch, Sacramento San-Joaquin roach, hardhead, and California bay shrimp)	NA (striped bass, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento San-Joaquin roach, hardhead, and California bay shrimp) A (American shad)
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8	S (striped bass, American shad)		S (striped bass, American shad)	A
	9	LTS		LTS	NA
AQUA-202: Effects of water operations on spawning and egg incubation habitat for non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)		LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)	NA (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQUA-203: Effects of water operations on rearing habitat for non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)		LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)	NA (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9	LTS (striped bass, American shad, California bay shrimp)		LTS (striped bass, American shad, California bay shrimp)	NA (striped bass, American shad, California bay shrimp)
AQUA-204: Effects of water operations on migration conditions for non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)		LTS (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)	NA (striped bass, American shad, threadfin shad, largemouth bass, Sacramento tule perch, Sacramento-San Joaquin roach, hardhead, California bay shrimp)
AQUA-205: Effects of construction of restoration measures on non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-206: Effects of contaminants associated with restoration measures on non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-207: Effects of restored habitat conditions on non-covered aquatic species of primary management concern	2D, 4, 4A, 5A	B		B	NA
AQUA-208: Effects of methylmercury management on non-covered aquatic species of primary management concern (CM12)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-211: Effects of localized reduction of predatory fish on non-covered aquatic species of primary management concern (CM15)	2D, 4, 4A, 5A	LTS		LTS	NA
AQUA-212: Effects of nonphysical fish barriers on non-covered aquatic species of primary management concern (CM16)	2D, 4, 4A, 5A	LTS		LTS	NA (striped bass, American shad, threadfin shad, largemouth bass) NE (Sacramento-San Joaquin roach, hardhead, California bay shrimp)
AQUA-217: Effects of water operations on reservoir coldwater fish habitat	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Terrestrial Biological Resources					
BIO-1: Changes in tidal perennial aquatic natural community as a result of implementing BDCP conservation measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	B		B	B
BIO-2: Increased frequency, magnitude and duration of periodic inundation of tidal perennial aquatic natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-3: Modification of tidal perennial aquatic natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		NI	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-4: Changes in tidal brackish emergent wetland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	B		B	B
BIO-5: Modification of tidal brackish emergent wetland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-6: Changes in tidal freshwater emergent wetland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	LTS (short-term)/ B (long-term)		LTS (short-term)/ B (long-term)	NA (short term-term)/ B (long-term)
BIO-7: Increased frequency, magnitude and duration of periodic inundation of tidal freshwater emergent wetland natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-8: Modification of tidal freshwater emergent wetland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-9: Changes in valley/foothill riparian natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	B		B	B
BIO-10: Increased frequency, magnitude and duration of periodic inundation of valley/foothill riparian natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	B		B	B
BIO-11: Modification of valley/foothill riparian natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-12: Changes in nontidal perennial aquatic natural community as a result of implementing BDCP conservation measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	B		B	B
BIO-13: Increased frequency, magnitude and duration of periodic inundation of nontidal perennial aquatic natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-14: Modification of nontidal perennial aquatic natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-15: Changes in nontidal freshwater perennial emergent wetland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	B		B	B
BIO-16: Increased frequency, magnitude and duration of periodic inundation of nontidal freshwater perennial emergent wetland natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-17: Modification of nontidal freshwater perennial emergent wetland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-18: Changes in alkali seasonal wetland complex natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-19: Increased frequency, magnitude and duration of periodic inundation of alkali seasonal wetland complex natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-20: Modification of alkali seasonal wetland complex natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-21: Changes in vernal pool complex natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-22: Increased frequency, magnitude and duration of periodic inundation of vernal pool complex natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-23: Modification of vernal pool complex natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-24: Changes in managed wetland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-25: Increased frequency, magnitude and duration of periodic inundation of managed wetland natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-26: Modification of managed wetland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-27: Modification of other natural seasonal wetland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-28: Modification of other natural seasonal wetland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-29: Changes in grassland natural community as a result of implementing BDCP Conservation Measures	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-30: Increased frequency, magnitude and duration of periodic inundation of grassland natural community	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-31: Modification of grassland natural community from ongoing operation, maintenance and management activities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-32: Loss or conversion of habitat for and direct mortality of vernal pool crustaceans	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-33: Indirect effects of Plan implementation on vernal pool crustaceans	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-34: Periodic effects of inundation of vernal pool crustacean habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-35: Loss of valley elderberry longhorn beetle habitat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-36: Indirect effects on valley elderberry longhorn beetle and its habitat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-37: Periodic effects of inundation of valley elderberry longhorn beetle habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-38: Loss or conversion of habitat for and direct mortality of nonlisted vernal pool invertebrates	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-39: Indirect effects of Plan implementation on nonlisted vernal pool invertebrates	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-40: Periodic effects of inundation of nonlisted vernal pool invertebrates' habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-41: Loss or conversion of habitat for and direct mortality of Sacramento and Antioch Dunes anthicid beetles	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-42: Loss or conversion of habitat for and direct mortality of delta green ground beetle	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-42: Avoid impacts on delta green ground beetle and its habitat	LTS	NA
BIO-43: Loss or conversion of habitat for and direct mortality of Callippe silverspot butterfly	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-43: Avoid and minimize loss of Callippe silverspot butterfly habitat	LTS	NA
BIO-44: Loss or conversion of habitat for and direct mortality of California red-legged frog	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-45: Indirect effects of Plan implementation on California red-legged frog	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-46: Loss or conversion of habitat for and direct mortality of California tiger salamander	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-47: Indirect effects of Plan implementation on California tiger salamander	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-48: Periodic effects of inundation of California tiger salamander habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-49: Loss or conversion of habitat for and direct mortality of giant garter snake	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-50: Indirect effects of Plan implementation on giant garter snake	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-50a: Loss of connectivity among giant garter snakes in the Coldani Marsh/White Slough subpopulation, Stone Lakes National Wildlife Refuge, and the Delta	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-51: Periodic effects of inundation of giant garter snake habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-52: Loss or conversion of habitat for and direct mortality of western pond turtle	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-53: Indirect effects of Plan implementation on western pond turtle	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-54: Periodic effects of inundation of western pond turtle habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-55: Loss or conversion of habitat for and direct mortality of special-status reptiles	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-55: Conduct preconstruction surveys for noncovered special-status reptiles and implement applicable CM22 measures	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-56: Indirect effects of Plan implementation on special-status reptile species	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-55: Conduct preconstruction surveys for noncovered special-status reptiles and implement applicable CM22 measures	LTS	NA
BIO-57: Loss or conversion of habitat for and direct mortality of California black rail	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-58: Effects on California black rail associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-59: Indirect effects of Plan implementation on California black rail	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-60: Fragmentation of California black rail habitat as a result of conservation component implementation	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-61: Periodic effects of inundation of California black rail habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-62: Loss or conversion of habitat for and direct mortality of California clapper rail	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-63: Indirect effects of Plan implementation on California clapper rail	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-64: Effects on California clapper rail associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-65: Fragmentation of California clapper rail habitat as a result of conservation component implementation	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-66: Loss or conversion of habitat for and direct mortality of California least tern	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-66: California least tern nesting colonies shall be avoided and indirect effects on colonies will be minimized	LTS	NA
BIO-67: Indirect effects of Plan implementation on California least tern	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-66: California least tern nesting colonies shall be avoided and indirect effects on colonies will be minimized	LTS	NA
BIO-68: Effects on California least tern associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-69: Loss or conversion of habitat for and direct mortality of greater sandhill crane	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	S	BIO-69a: Compensate for the loss of Medium to Very High-Value Greater Sandhill Crane Foraging Habitat	LTS	NA
BIO-70: Effects on greater sandhill crane associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-71: Indirect effects of Plan implementation on greater sandhill crane	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-72: Loss or conversion of habitat for and direct mortality of lesser sandhill crane	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	S	BIO-72: Compensate for the loss of medium- to over high-value lesser sandhill crane foraging habitat	LTS	NA
BIO-73: Effects on lesser sandhill crane associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-74: Indirect effects of Plan implementation on lesser sandhill crane	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-75: Loss or conversion of habitat for and direct mortality of least Bell's vireo and yellow warbler	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-76: Fragmentation of least Bell's vireo and yellow warbler habitat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-77: Effects on least Bell's vireo and yellow warbler associated with electrical transmission facilities	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-78: Indirect effects of Plan implementation on least Bell's vireo and yellow warbler	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-79: Periodic effects of inundation of least Bell's vireo and yellow warbler habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	B		B	B
BIO-80: Loss or conversion of habitat for and direct mortality of Suisun song sparrow and saltmarsh common yellowthroat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-81: Indirect effects of Plan implementation on Suisun song sparrow and saltmarsh common yellowthroat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-82: Effects on Suisun song sparrow and saltmarsh common yellowthroat associated with electrical transmission facilities	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-83: Loss or conversion of habitat for and direct mortality of Swainson's hawk	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-84: Effects on Swainson's hawk associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-85: Indirect effects of Plan implementation on Swainson's hawk	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-86: Periodic effects of inundation of Swainson's hawk nesting and foraging habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-87: Loss or conversion of habitat for and direct mortality of tricolored blackbird	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-88: Effects on tricolored blackbird associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-89: Indirect effects of Plan implementation on tricolored blackbird	NAA	v		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-90: Periodic effects of inundation of tricolored blackbird habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-91: Loss or conversion of habitat for and direct mortality of western burrowing owl	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
	4	S	BIO-91: Compensate for near-term loss of high-value western burrowing owl habitat	LTS	NA
BIO-92: Effects on western burrowing owl associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-93: Indirect effects of Plan implementation on western burrowing owl	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-94: Periodic effects of inundation on western burrowing owl habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-95: Loss or conversion of habitat for and direct mortality of western yellow-billed cuckoo	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-96: Fragmentation of western yellow-billed cuckoo habitat as a result of constructing the water conveyance facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-97: Effects on western yellow-billed cuckoo associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-98: Indirect effects of Plan implementation on western yellow-billed cuckoo	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-99: Periodic effects of inundation of western yellow-billed cuckoo habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-100: Loss or conversion of habitat for and direct mortality of white-tailed kite	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-101: Effects on white-tailed kite associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-102: Indirect effects of Plan implementation on white-tailed kite	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-103: Periodic effects of inundation of white-tailed kite habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-104: Loss or conversion of habitat for and direct mortality of yellow-breasted chat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-105: Fragmentation of yellow-breasted chat habitat as a result of constructing the water conveyance facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-106: Effects on yellow-breasted chat associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-107: Indirect effects of Plan implementation on yellow-breasted chat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-108: Periodic effects of inundation of yellow-breasted chat habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	B		B	B
BIO-109: Loss or conversion of habitat for and direct mortality of Cooper's hawk and osprey	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-110: Effects on Cooper's hawk and osprey associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-111: Indirect effects of Plan implementation on Cooper's hawk and osprey	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-112: Periodic effects of inundation of Cooper's hawk and osprey nesting habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-113: Loss or conversion of habitat for and direct mortality of golden eagle and ferruginous hawk	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	S	BIO-113: Compensate for the near-term loss of golden eagle and ferruginous hawk foraging habitat	LTS	NA
BIO-114: Effects on golden eagle and ferruginous hawk associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-115: Indirect effects of Plan implementation on golden eagle and ferruginous hawk	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-116: Periodic effects of inundation on golden eagle and ferruginous hawk habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-117: Loss or conversion of nesting habitat for and direct mortality of cormorants, herons and egrets	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds BIO-117: Avoid impacts on rookeries	LTS	NA
BIO-118: Effects associated with electrical transmission facilities on cormorants, herons and egrets	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-119: Indirect effects of Plan implementation on cormorants, herons and egrets	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds BIO-117: Avoid impacts on rookeries	LTS	NA
BIO-120: Periodic effects of inundation on cormorants, herons and egrets as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-121: Loss or conversion of habitat for short-eared owl and northern harrier	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-122: Effects on short-eared owl and northern harrier associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-123: Indirect effects of Plan implementation on short-eared owl and northern harrier	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-124: Periodic effects of inundation on short-eared owl and northern harrier as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-125: Loss or conversion of habitat for and direct mortality of mountain plover	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	S	BIO-125: Compensate for the near-term loss of mountain plover wintering habitat	LTS	NA
BIO-126: Effects on mountain plover associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-127: Indirect effects of Plan implementation on mountain plover	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-128: Periodic effects of inundation on mountain plover as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-129a: Loss or conversion of habitat for and direct mortality of black tern	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds BIO-129a: Compensate for loss of black tern nesting habitat (short-term)	LTS	NA
BIO-129b: Indirect effects of Plan implementation on black tern	NAA	B (short-term)// SS (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-129c: Periodic effects of inundation on black tern nesting habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-130: Loss or conversion of habitat for and direct mortality of California horned lark and grasshopper sparrow	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds BIO-130: Compensate for near-term loss of California horned lark and grasshopper sparrow habitat	LTS	NA
BIO-131: Effects on California horned lark and grasshopper sparrow and associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-132: Indirect effects of Plan implementation on grasshopper sparrow and California horned lark	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-133: Periodic effects of inundation on California horned lark and grasshopper sparrow as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-134: Loss or conversion of habitat for and direct mortality of least bittern and white-faced ibis	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-135: Effects on least bittern and white-faced ibis associated with electrical transmission facilities	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-136: Indirect effects of Plan implementation on least bittern and white-faced ibis	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-137: Periodic effects of inundation on least bittern and white-faced ibis as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-138: Loss or conversion of modeled habitat for and direct mortality of loggerhead shrike	NAA	B (short-term)/ S (long-term)		B (short-term)v/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
	4	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds BIO-138: Compensate for the near-term loss of high-value loggerhead shrike habitat	LTS	NA
BIO-139: Effects on loggerhead shrike associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-140: Indirect effects of Plan implementation on loggerhead shrike	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-141: Periodic effects of inundation on loggerhead shrike as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-142: Loss or conversion of habitat for and direct mortality of Modesto song sparrow	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-143: Effects on Modesto song sparrow associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-144: Indirect effects of Plan implementation on Modesto song sparrow	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-145: Periodic effects of inundation on Modesto song sparrow as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-146: Indirect effects of implementation of conservation components on bank swallow	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-146: Active bank swallow colonies shall be avoided and indirect effects on bank swallow will be minimized	LTS	NA
BIO-147: Effects of upstream reservoir and water conveyance facility operations on bank swallow	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-147: Monitor bank swallow colonies and evaluate winter and spring flows upstream of the study area	LTS	NA
BIO-148: Loss of habitat for and direct mortality of yellow-headed blackbird	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-149: Effects on yellow-headed blackbird associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-150: Indirect effects of Plan implementation on yellow-headed blackbird	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-151: Periodic effects of inundation of yellow-headed blackbird nesting habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-152: Loss or conversion of habitat for and direct mortality of riparian brush rabbit	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-153: Indirect effects of Plan implementation on riparian brush rabbit	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-154: Periodic effects of inundation of riparian brush rabbit habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-155: Loss or conversion of habitat for and direct mortality of riparian woodrat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-156: Indirect effects of Plan implementation on riparian woodrat	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-157: Periodic effects of inundation of riparian woodrat habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-158: Loss or conversion of habitat for and direct mortality of salt marsh harvest mouse	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-159: Indirect effects of Plan implementation on salt marsh harvest mouse	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-160: Loss or conversion of habitat for and direct mortality of Suisun shrew	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-161: Indirect effects of Plan implementation on Suisun shrew	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	LTS		LTS	NA
BIO-162: Loss or conversion of habitat for and direct mortality of San Joaquin kit fox and American badger	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-162: Conduct preconstruction survey for American badger	LTS	NA
BIO-163: Indirect effects of Plan implementation on San Joaquin kit fox and American badger	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-162: Conduct preconstruction survey for American badger	LTS	NA
BIO-164: Loss or conversion of habitat for and direct mortality of San Joaquin pocket mouse	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-165: Indirect effects of Plan implementation on San Joaquin pocket mouse	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-166: Loss or conversion of habitat for and direct mortality of special-status bats	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-166: Conduct preconstruction surveys for roosting bats and implement protective measures	LTS	NA
BIO-167: Indirect effects of Plan implementation on special-status bats	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-166: Conduct preconstruction surveys for roosting bats and implement protective measures	LTS	NA
BIO-168: Periodic effects of inundation of special-status bat habitat as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NE
	4	S	BIO-166: Conduct preconstruction surveys for roosting bats and implement protective measures	LTS	NA
BIO-169: Effects on habitat and populations of vernal pool plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-170: Effects on habitat and populations of alkali seasonal wetland plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation: CEQA	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation: CEQA	Impact After Mitigation: NEPA
BIO-171: Effects on habitat and populations of grassland plant species	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NA
	4	LTS		LTS	NA
BIO-172: Effects on habitat and populations of valley/foothill riparian plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	NI		NI	NA
	4	LTS		LTS	NA
BIO-173: Effects on habitat and populations of tidal wetland plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	S	BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species	LTS	NA
BIO-174: Effects on habitat and populations of inland dune plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	NI		NI	NE
BIO-175: Effects on habitat and populations of nontidal wetland plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species	LTS	NA
	2D, 4, 4A, 5A	S	BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species	LTS	NA
BIO-176: Effects of constructing water conveyance facilities (CM1) on wetlands and other waters of the United States	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	4, 2D, 4A, 5A	S	BIO-176: Compensatory Mitigation for Fill of Waters of the U.S.	LTS	NA
BIO-177: Effects of implementing other conservation measures (CM2–CM10) on wetlands and other waters of the United States	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4A, 5A	LTS		LTS	NA
	4	B		B	B
BIO-178: Loss or conversion of habitat for waterfowl and shorebirds as a result of water conveyance facilities construction	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
BIO-179: Loss or conversion of habitat for wintering waterfowl as a result of implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-179a: Conduct food studies and monitoring for wintering waterfowl in Suisun Marsh BIO-179b: Conduct food studies and monitoring to demonstrate food quality of palustrine tidal wetlands in the Yolo and Delta Basins	LTS	NA
BIO-180: Loss or conversion of habitat for breeding waterfowl from implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-180: Conduct food and monitoring studies of breeding waterfowl in Suisun Marsh	LTS	NA
BIO-181: Loss or conversion of habitat for shorebirds from implementation of conservation components	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-182: Effects on shorebirds and waterfowl associated with electrical transmission facilities	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-183: Indirect effects of Plan implementation on shorebirds and waterfowl	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds	LTS	NA
BIO-184: Effects on habitat and populations of common wildlife and plants	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-185: Effect of BDCP Conservation Measures on wildlife corridors	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-186: Effects on natural communities resulting from the introduction and spread of invasive plant species	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	LTS		LTS	NA
BIO-187: Compatibility of the proposed water conveyance facilities and other Conservation Measures with federal, state, or local laws, plans, policies, or executive orders addressing terrestrial biological resources in the study area	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	NI		NI	NE

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Land Use					
LU-1: Incompatibility with applicable land use designations, goals, and policies as a result of constructing the proposed water conveyance facility (CM1)	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	NI		NI	NE
LU-2: Conflicts with existing land uses as a result of constructing the proposed water conveyance facility (CM1)	NAA, 2D, 4, 4A, 5A	NI		NI	A
LU-3: Create physical structures adjacent to and through a portion of an existing community as a result of constructing the proposed water conveyance facility (CM1)	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments	SU	A
LU-4: Incompatibility with applicable land use designations, goals and policies as a result of implementing the proposed Conservation Measures 2–21	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	4	NI		NI	NE
	2D, 4A, 5A	LTS		LTS	NA
LU-5: Conflicts with existing land uses as a result of implementing the proposed Conservation Measures 2–21	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	4	NI		NI	A
	2D, 4A, 5A	LTS		LTS	NA
LU-6: Create physical structures adjacent to and through a portion of an existing community as a result of implementing the proposed Conservation Measures 2–21	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
Agricultural Resources					
AG-1: Temporary conversion, short-term conversion, and permanent conversion of Important Farmland or of farmland under Williamson Act contracts or in Farmland Security Zones as a result of constructing the proposed water conveyance facility.	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	SU	A

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AG-2: Other effects on agriculture as a result of constructing and operating the proposed water conveyance facility	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones GW-1: Maintain water supplies in areas affected by construction dewatering GW-5: Agricultural lands seepage minimization WQ-11: Avoid, minimize, or offset, as feasible, reduced water quality conditions	SU	A
AG-3: Temporary conversion, short-term conversion, and permanent conversion of Important Farmland or of land subject to Williamson Act contracts or in Farmland Security Zones as a result of implementing the proposed Conservation Measures 2–11, 13, 15, 16, 20, and 21	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	SU	A
AG-4: Other effects on agriculture as a result of implementing the proposed Conservation Measures 2–11, 13, 15, 16, 20, and 21	NAA	B (short-term)/ S (long-term)		B (short-term)/ S (long-term)	B (short-term)/ A (long-term)
	2D, 4, 4A, 5A	S	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones GW-5: Agricultural lands seepage minimization	SU	A
Recreation					
REC-1: Permanent displacement of existing well-established public use or private commercial recreation facility available for public access as a result of the location of the proposed water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	LTS		LTS	NA
REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	REC-2: Provide alternative bank fishing access sites BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible	SU/LTS[9]	A/NA[13]

[9] Impacts and effects on recreation from constructing the intakes would be LTS and NA, respectively, following mitigation.

Level of Significance/Determination of Effects:

CEQA			
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant	NI=no impact	ND=no determination
	S=significant	B=beneficial	N/A=not applicable

NEPA		
A=adverse	NE=no effect	ND=no determination
NA=not adverse	B=beneficial	N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
			AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan AES-4a: Limit construction to daylight hours within 0.25 mile of residents AES-4b: Minimize fugitive light from portable sources used for construction AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments NOI-1a: Employ noise-reducing construction practices during construction NOI-1b: Prior to construction, initiate a complaint/response tracking program		
REC-3: Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan	SU	A
REC-4: Result in long-term reduction of recreational fishing opportunities as a result of constructing the proposed water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	REC-2: Provide alternative bank fishing access sites AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Use an attenuation device to reduce effects of pile driving and other construction-related underwater noise NOI-1a: Employ noise-reducing construction practices during construction	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
			NOI-1b: Prior to construction, initiate a complaint/response tracking program AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan		
REC-5: Result in long-term reduction of recreational fishing opportunities as a result of the operation of the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
REC-6: Cause a change in reservoir or lake elevations resulting in substantial reductions in water-based recreation opportunities and experiences at north- and south-of-Delta reservoirs	NAA	LTS	LTS	NA	
	2D, 4, 4A, 5A	LTS (for north-and south-of-Delta reservoirs for all operational scenarios except for San Luis Reservoir) S (for Scenarios H2 and H4 for San Luis Reservoir)	REC-6: Provide a Temporary Alternative Boat Launch to Ensure Access to San Luis Reservoir	LTS	NA
REC-7: Result in long-term reduction in water-based recreation opportunities as a result of maintenance of the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
REC-8: Result in long-term reduction in land-based recreation opportunities as a result of maintenance of the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	NI		NI	NE

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
REC-9: Result in long-term reduction in fishing opportunities as a result of implementing Conservation Measures 2–21	NAA	LTS		LTS	NA
	4	LTS	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan AES-4b: Minimize fugitive light from portable sources used for construction AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments NOI-1a: Employ noise-reducing construction practices during construction NOI-1b: Prior to construction, initiate a complaint/response tracking program AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
	2D, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
REC-10: Result in long-term reduction in boating-related recreation opportunities as a result of implementing Conservation Measures 2–21	4	S	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan AES-4b: Minimize fugitive light from portable sources used for construction AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments NOI-1a: Employ noise-reducing construction practices during construction NOI-1b: Prior to construction, initiate a complaint/response tracking program AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise AQUA-1b: Use an attenuation device to reduce effects of pile driving and other construction-related underwater noise	LTS	NA
	NAA, 2D, 4A, 5A	LTS		LTS	NA
REC-11: Result in long-term reduction in upland recreational opportunities as a result of implementing Conservation Measures 2–21	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
REC-12: Compatibility of the proposed water conveyance facilities and other conservation measures with federal, state, or local plans, policies, or regulations addressing recreation resources	NAA, 2D, 4, 4A, 5A	NI		NI	NE
ECON-1: Temporary effects on regional economics and employment in the Delta region during construction of the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	NI	A
ECON-2: Effects on population and housing in the Delta region during construction of the proposed water conveyance facilities.	NAA	NI		NI	NA
	4	LTS		LTS	LTS
	2D, 4A, 5A	NI		NI	NA
ECON-3: Changes in community character as a result of constructing the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI		NI	A/B[10]
ECON-4: Changes in local government fiscal conditions as a result of constructing the proposed water conveyance facilities.	NAA, 2D, 4, 4A, 5A	NI		NI	NA
ECON-5: Effects on recreational economics as a result of constructing the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	Various mitigation measures introduced in the following chapters: Chapter 12, *Terrestrial Biological Resources;* Chapter 15, *Recreation*; Chapter 17, *Aesthetics and Visual Resources*; Chapter 19, *Transportation*; and Chapter 23, *Noise*.	NI	A
ECON-6: Effects on agricultural economics in the Delta region during construction of the proposed water conveyance facilities	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	NI	A
ECON-7: Permanent regional economic and employment effects in the Delta region during operation and maintenance of the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	NI	A
ECON-8: Permanent effects on population and housing in the Delta region during operation and maintenance of the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	NI		NI	NA

[10] While water conveyance construction could result in beneficial effects relating to the economic welfare of a community through additional regional employment and income, adverse social effects could also arise as a result of declining economic stability in communities closest to construction effects and in those most heavily influenced by agricultural and recreational activities.

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable

NEPA

A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
ECON-9: Changes in community character during operation and maintenance of the proposed water conveyance facilities	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	Various mitigation measures and environmental commitments related to noise, visual effects, transportation, agriculture and recreation would reduce adverse effects (See Appendix 3B, Environmental Commitments).	NI	A
ECON-10: Changes in local government fiscal conditions during operation and maintenance of the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI		NI	A/B[11]
ECON-11: Effects on recreational economics during operation and maintenance of the proposed water conveyance facilities	2D, 4, 4A, 5A	NI		NI	NA
ECON-12: Permanent effects on agricultural economics in the Delta region during operation and maintenance of the proposed water conveyance facilities.	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	NI	A
ECON-13: Effects on the Delta region's economy and employment due to the implementation of the proposed Conservation Measures 2–22	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones MIN-5: Design Conservation Measures 4, 5, and 10 to avoid displacement of active natural gas wells to the extent feasible	NI	A/B[12]
ECON-14: Effects on population and housing in the Delta region as a result of implementing the proposed Conservation Measures 2–22	NAA, 2D, 4, 4A, 5A	NI		NI	NA
ECON-15: Changes in community character as a result of implementing the proposed Conservation Measures 2–22	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	Various mitigation measures and environmental commitments related to transportation, agriculture, and recreation would be anticipated to reduce these adverse effects (See Appendix 3B).	NI	A
ECON-16: Changes in local government fiscal conditions as a result of implementing the proposed Conservation Measures 2–22	NAA, 2D, 4, 4A, 5A	NI		NI	NA

[11] A decrease in revenue as a result property tax and assessment revenue forgone as a result of the proposed water conveyance facilities could result in the loss of a substantial share of some agencies' tax bases, which would be considered an adverse effect. However, the BDCP proponents would make arrangements to compensate local governments for the loss of property tax or assessment revenue for land used for constructing, locating, operating, or mitigating for new Delta water conveyance facilities. Additionally, operation and maintenance of the water conveyance facilities would be anticipated to result in a net increase of income and employment in the Delta region. This would also create an indirect beneficial effect through increased sales tax revenue for local government entities that rely on sales taxes.

[12] Implementation of CMs 2–22 would result in an increase in construction and operation and maintenance-related employment and labor income, which would be considered a beneficial effect. However, there may also be a resulting decrease in agricultural-related and natural gas production-related employment and labor income as a result of implementing these conservation measures, which would be considered an adverse effect.

Level of Significance/Determination of Effects:

CEQA				**NEPA**		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
ECON-17: Effects on recreational economics as a result of implementing the proposed Conservation Measures 2–22	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI		NI	A/B[13]
ECON-18: Effects on agricultural economics in the Delta region as a result of implementing the proposed Conservation Measures 2–22	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI	AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones	NI	A
ECON-19: Socioeconomic effects in the south-of-Delta hydrologic regions	NAA, 2D, 4, 4A, 5A	NI		NI	A/B[14]
Aesthetics and Visual Resources					
AES-1: Substantial alteration in existing visual quality or character during construction of conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan	SU	A

[13] Adverse effects would be primarily limited to areas close to restoration areas and during site preparation and earthwork phases. These effects could result in a decline in visits to the Delta and reduction in recreation-related spending, creating an adverse economic effect throughout the Delta. Beneficial recreational effects would generally result during later stages of the BDCP permit period as CM2–CM22 are implemented and environmental conditions supporting recreational activities are enhanced. These effects could improve the quality of recreational experiences, leading to increased economic activities related to recreation, particularly in areas where conservation measure implementation would create new recreational opportunities.

[14] If operation of water conveyance facilities under Alternative 6A reduced M&I deliveries to the extent that it would, in the long run, constrain population growth, its implementation could reinforce a socioeconomic status quo or limit potential economic and employment growth in hydrologic regions. Such changes to agricultural production and population growth with its associated economic activity could also lead to shifts in the character of communities in the hydrologic regions with resultant beneficial or adverse effects. Likewise, limited growth associated with reduced deliveries could require lower expenditures for local governments while also leading to reduced revenue.

Level of Significance/Determination of Effects:

CEQA				**NEPA**		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AES-2: Permanent effects on a scenic vista from presence of conveyance facilities.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1e: Apply aesthetic design treatments to all structures to the extent feasible	SU	A
AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1e: Apply aesthetic design treatments to all structures to the extent feasible	SU	A
AES-4: Creation of a new source of light or glare that would adversely affect views in the area as a result of construction and operation of conveyance facilities.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	AES-4a: Limit construction to daylight hours within 0.25 mile of residents AES-4b: Minimize fugitive light from portable sources used for construction AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences	SU	A
AES-5: Substantial alteration in existing visual quality or character during operation.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	LTS		LTS	NA
AES-6: Substantial alteration in existing visual quality or character during construction of CM2–CM22.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible AES-1b: Install visual barriers between construction work areas and sensitive receptors AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan AES-1d: Restore barge unloading facility sites once decommissioned AES-1e: Apply aesthetic design treatments to all structures to the extent feasible	SU	A

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant	NI=no impact	ND=no determination	A=adverse	NE=no effect	ND=no determination
	S=significant	B=beneficial	N/A=not applicable	NA=not adverse	B=beneficial	N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
			AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities AES-1g: Implement best management practices to implement project landscaping plan AES-4a: Limit construction to daylight hours within 0.25 mile of residents AES-4b: Minimize fugitive light from portable sources used for construction AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences AES-6a: Underground new or relocated utility lines where feasible AES-6b: Develop and implement an afterhours low-intensity and lights off policy AES-6c: Implement a comprehensive visual resources management plan for the Delta and study area		
AES-7: Compatibility of the proposed water conveyance facilities and other conservation measures with federal, state, or local plans, policies, or regulations addressing aesthetics and visual resources	NAA	NI		NI	NA
	2D, 4, 4A, 5A	NI		NI	NE
Cultural Resources					
CUL-1: Effects on identified archaeological sites resulting from construction of conveyance facilities	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-1: Prepare a data recovery plan and perform data recovery excavations on the affected portion of the deposits of identified and significant archaeological sites	SU	A
CUL-2: Effects on archaeological sites to be identified through future inventory efforts	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-2: Conduct inventory, evaluation, and treatment of archaeological resources	SU	A
CUL-3: Effects on archaeological sites that may not be identified through inventory efforts	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-3: Implement an archaeological resources discovery plan, perform training of construction workers, and conduct construction monitoring	SU	A
CUL-4: Effects on buried human remains damaged during construction	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-4: Follow state and federal law governing human remains if such resources are discovered during construction	SU	A
CUL-5: Direct and indirect effects on eligible and potentially eligible historic architectural/built environment-resources resulting from construction activities	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-5: Consult with relevant parties, prepare and implement a built environment treatment plan	SU	A

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
CUL-6: Direct and indirect effects on unidentified and unevaluated historic architectural/built environment resources resulting from construction activities	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-6: Conduct a survey of inaccessible properties to assess eligibility, determine if these properties will be adversely impacted by the project, and develop treatment to resolve or mitigate adverse impacts	SU	A
CUL-7: Effects of other Conservation Measures on cultural resources	NAA	S		SU	A
	2D, 4, 4A, 5A	S	CUL-7: Conduct cultural resource studies and adopt cultural resource mitigation measures for cultural resource impacts associated with implementation of Conservation Measures 2–22	SU	A
CUL-8: Compatibility of the proposed water conveyance facilities and other Conservation Measures with plans and policies	NAA	NI		NI	NE
	2D, 4, 4A, 5A	NI		NI	NE
Transportation					
TRANS-1: Increased construction vehicle trips resulting in unacceptable LOS conditions	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments	SU[20]	A[21]
TRANS-2: Increased construction vehicle trips exacerbating unacceptable pavement conditions	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	TRANS-2a: Prohibit construction activity on physically deficient roadway segments TRANS-2b: Limit construction activity on physically deficient roadway segments TRANS-2c: Improve physical condition of affected roadway segments as stipulated in mitigation agreements or encroachment permits	SU[21]	A[22]
TRANS-3: Increase in safety hazards, including interference with emergency routes during construction	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments	SU[22]	A[23]
TRANS-4: Disruption of marine traffic during construction	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
TRANS-5: Disruption of rail traffic during construction.	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A		TRANS-1a: Implement site-specific construction traffic management plan	LTS	NA
TRANS-6: Disruption of transit service during construction.	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments	SU	A
	9	S	TRANS-1a: Implement site-specific construction traffic management plan	LTS	NA
TRANS-7: Interference with bicycle routes during construction.	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan	LTS	NA
TRANS-8: Increased traffic volumes and delays during operations and maintenance.	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
TRANS-9: Permanent alteration of transportation patterns during operations and maintenance.	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
TRANS-10: Increased traffic volumes during implementation of CM2–CM22	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	TRANS-1a: Implement site-specific construction traffic management plan TRANS-1b: Limit hours or amount of construction activity on congested roadway segments TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments	SU[23, 24]	A[24, 25]
TRANS-11: Compatibility of the proposed water conveyance facilities and other conservation measures with plans and policies	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	NI		NI	NE
TRANS-12: Potential Effects on Navigation From Changes in Surface Water Elevations Caused by Construction of Water Conveyance Facilities	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
TRANS-13: Potential Effects of Navigation from Changes in Surface Elevations Caused by Operation of Intakes	NAA	NI		NI	NE
	4A	LTS	SW-4: Implement Measures to Reduce Runoff and Sedimentation	LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 5A	LTS		LTS	NA
TRANS-14: Potential Effects on Navigation Caused by Sedimentation From Construction of Intakes	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, 5A	LTS	SW-4: Implement Measures to Reduce Runoff and Sedimentation	LTS	NA
TRANS-15: Potential Effects on Navigation Caused by Sedimentation From Construction of Barge Facilities	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, 5A	LTS	SW-4: Implement Measures to Reduce Runoff and Sedimentation	LTS	NA
TRANS-16: Potential Effects on Navigation Caused by Sedimentation From Construction of Clifton Court Forebay	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, 5A	NI		NI	NE
TRANS-17: Potential Effects on Navigation Caused by Sedimentation From Operation of Intakes	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, 5A	LTS	SW-4: Implement Measures to Reduce Runoff and Sedimentation	LTS	NA
TRANS-18: Potential Effects on Navigation From Construction and Operations of Head of Old River Barrier	NAA	NI		NI	NE
	4A, 2A, 2B, 2C, 3, 4, 2D	LTS		LTS	NA
	1A, 1B, 1C, 5, 6A, 6B, 6C, 7, 8, 9, 5A	NI		NI	NE
TRANS-19: Potential Cumulative Effects on Navigation From Construction and Operations of Water Conveyance Facilities	NAA	NI		NI	NE
	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 4A, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 5A	LTS		LTS	NA
Public Services and Utilities					
UT-1: Increased demand on law enforcement, fire protection, and emergency response services from new workers in the Plan Area as a result of constructing the proposed water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
UT-2: Displacement of public service facilities as a result of constructing the proposed water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
UT-3: Effects on public schools as a result of constructing the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
UT-4: Effects on water or wastewater treatment services and facilities as a result of constructing the proposed water conveyance facilities.	NAA. 2D, 4, 4A, 5A	LTS		LTS	NA
UT-5: Effects on landfills as a result of solid waste disposal needs during construction of the proposed water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
UT-6: Effects on regional or local utilities as a result of constructing the proposed water conveyance facilities.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	UT-6a: Verify locations of utility infrastructure UT-6b: Relocate utility infrastructure in a way that avoids or minimizes any effect on operational reliability UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety	SU[15]	A[16]
UT-7: Effects on public services and utilities as a result of operation and maintenance of the proposed water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
UT-8: Effects on public services and utilities as a result of implementing the proposed CM2–CM11	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	UT-6a: Verify locations of utility infrastructure UT-6b: Relocate utility infrastructure in a way that avoids or minimizes any effect on operational reliability UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety	SU	NA
Energy					
ENG-1: Wasteful or inefficient energy use for temporary construction activities	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
ENG-2: Wasteful or inefficient energy use for pumping and conveyance	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
ENG-3: Compatibility of the proposed water conveyance facilities and CM2–CM22 with plans and policies	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	NI		NI	

[15] If coordination with all appropriate utility providers and local agencies to integrate with other construction projects and minimize disturbance to communities were successful under Mitigation Measure UT-6b, the impact would be less than significant (CEQA) and there would be no adverse effect (NEPA).

[16] If coordination with all appropriate utility providers and local agencies to integrate with other construction projects and minimize disturbance to communities were successful under Mitigation Measure UT-6b, the impact would be less than significant (CEQA) and there would be no adverse effect (NEPA).

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Air Quality and Greenhouse Gases					
AQ-1: Generation of criteria pollutants in excess of the SMAQMD regional thresholds during construction of the proposed water conveyance facility (previously AQ-1).	NAA	S		S	A
	1A, 1B, 2A, 2B, 6A, 6B, 2D	S (for ROG, NO_X, and PM10)	AQ-1a: Mitigate and offset construction-generated criteria pollutant emissions within the SFNA to net zero (0) for emissions in excess of general conformity *de minimis* thresholds (where Applicable) and to quantities below applicable CEQA thresholds for other pollutants AQ-1b: Develop an alternative or complementary offsite mitigation program to mitigate and offset construction-generated criteria pollutant emissions within the SFNA to net zero (0) for emissions in excess of general conformity *de minimis* thresholds (where applicable) and to quantities below applicable CEQA thresholds for other pollutants	LTS	NA
	1C, 2C, 6C, 3, 7, 8	S (for ROG, NO_X)		LTS	NA
	4, 4A, 5, 5A	S (for NO_X)		LTS	NA
AQ-2: Generation of criteria pollutants in excess of the YSAQMD regional thresholds during construction of the proposed water conveyance facility (previously AQ-1).	NAA	S		S	A
	1A, 1B, 2A, 2B, 6A, 6B, 7, 8, 9, 2D	S (for ROG, NO_X, and PM10)	AQ-1a: Mitigate and offset construction-generated criteria pollutant emissions within the SFNA to net zero (0) for emissions in excess of general conformity *de minimis* thresholds (where Applicable) and to quantities below applicable CEQA thresholds for other pollutants AQ-1b: Develop an alternative or complementary offsite mitigation program to mitigate and offset construction-generated criteria pollutant emissions within the SFNA to net zero (0) for emissions in excess of general conformity *de minimis* thresholds (where applicable) and to quantities below applicable CEQA thresholds for other pollutants	LTS	NA
	3	S (for PM10)		LTS	NA
	4, 4A, 5, 5A	LTS		LTS	NA
AQ-3: Generation of criteria pollutants in excess of the BAAQMD regional thresholds during construction of the proposed water conveyance facility.	NAA	S		S	A
	1A, 1B, 2A, 2B, 3, 5, 6A, 6B, 7, 8, 9, 2D, 4, 4A, 5A	S (for ROG and NO_X)	AQ-3a: Mitigate and offset construction-generated criteria pollutant emissions within BAAQMD/SFBAAB to net zero (0) for emissions in excess of General Conformity *de minimis* thresholds (where applicable) and to quantities below applicable BAAQMD CEQA thresholds for other pollutants AQ-3b: Develop an alternative or complementary off-site mitigation program to mitigate and offset construction-generated criteria pollutant emissions within the BAAQMD/SFBAAB to net zero (0) for emissions in excess of General Conformity *de minimis* thresholds (where applicable) and to quantities below applicable BAAQMD CEQA thresholds for other pollutants	LTS	NA
	1C, 2C, 6C	S (for ROG and NO_X)		S (for ROG and NO_X)	A (for ROG and NO_X)

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQ-4: Generation of criteria pollutants in excess of the SJVAPCD regional thresholds during construction of the proposed water conveyance facility.	NAA	S		S	A
	1A, 1B, 2A, 2B, 2D, 3, 4, 4A, 5, 5A, 7, 8	S (for ROG, NO_X and PM10)	AQ-4a: Mitigate and offset construction-generated criteria pollutant emissions within SJVAPCD/SJVAB to net zero (0) for emissions in excess of General Conformity *de minimis* thresholds (where applicable) and to quantities below applicable SJVAPCD CEQA thresholds for other pollutants AQ-4b: Develop an alternative or complementary off-site mitigation program to mitigate and offset construction-generated criteria pollutant emissions within the SJVAPCD/SJVAB to net zero (0) for emissions in excess of General Conformity *de minimis* thresholds (where applicable) and to quantities below applicable SJVAPCD CEQA thresholds for other pollutants	LTS	NA
	9	S (NO_X and PM10)		LTS	NA
	1C, 2C, 6C	LTS		LTS	NA
AQ-5: Generation of criteria pollutants in excess of the SMAQMD regional thresholds from operation and maintenance of the proposed water conveyance facility (previously AQ-6).	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-6: Generation of criteria pollutants in excess of the YSAQMD regional thresholds from operation and maintenance of the proposed water conveyance facility (previously AQ-5).	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-7: Generation of criteria pollutants in excess of the BAAQMD regional thresholds from operation and maintenance of the proposed water conveyance facility.	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-8: Generation of criteria pollutants in excess of the SJVAPCD regional thresholds from operation and maintenance of the proposed water conveyance facility.	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter in Excess of SMAQMD's Health-Based Concentration Thresholds (new impact).	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and Receptor Exposure to PM2.5 and PM10	LTS	NA
AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter in Excess of YSAQMD's Health-Based Concentration Thresholds (new impact).	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter in Excess of BAAQMD's Health-Based Concentration Thresholds (new impact)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds (new impact)	NAA	LTS		LTS	NA
	1A, 1B, 2A, 2B, 2D, 3, 5, 5A, 6A, 6B, 7, 8, 9	S	AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and Receptor Exposure to PM2.5 and PM10	LTS	NA
	1C, 2C, 6C, 4, 4A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon Monoxide (new impact)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds (previously Impact AQ-11)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9	LTS		LTS	NA
AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds (previously impact AQ-10)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds (previously impact AQ-13)	1A, 1C, 2A, 2C, 2D, 3, 5, 5A, 6A, 6C, 7, 8	S (cancer risk)	AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk	SU (cancer risk)[17]	A (cancer risk)[38]
	NAA, 1B, 2B, 4, 4A, 6B, 9	LTS		LTS	NA
AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds (previously impact AQ-12)	1B, 2B, 6B	S (cancer risk)	AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk	SU (cancer risk)[18]	A (cancer risk)[39]
	NAA, 1A, 1C, 2A, 2C, 2D, 3, 4, 4A, 5, 5A, 6A, 6C, 7, 8, 9	LTS		LTS	NA
AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever) (new impact)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-19: Creation of Potential Odors Affecting a Substantial Number of People	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-20: Generation of Criteria Pollutants in the Excess of Federal De Minimis Thresholds from Construction and Operation and Maintenance of the Proposed Water Conveyance Facility	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 2D, 3, 5, 5A, 6A, 6B, 6C, 7, 8, 9	S	AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants AQ-1b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants	SU	A
	4, 4A	S		LTS	NA

[17] Mitigation Measure AQ-16 would reduce exposure to substantial cancer risk by relocating affected receptors. The BDCP proponents cannot ensure that the affected landowners will accept DWR's offer for relocation assistance. If the landowners choose not to accept DWR's offer of relocation assistance, a significant impact in the form of exposure to substantial excess cancer risk would occur. Therefore, this impact would be significant and unavoidable. If, however, the landowners accept DWR's offer of relocation assistance, the impact would be less than significant.

[18] Mitigation Measure AQ-16 would reduce exposure to substantial cancer risk by relocating affected receptors. The BDCP proponents cannot ensure that the affected landowners will accept DWR's offer for relocation assistance. If the landowners choose not to accept DWR's offer of relocation assistance, a significant impact in the form of exposure to substantial excess cancer risk would occur. Therefore, this impact would be significant and unavoidable. If, however, the landowners accept DWR's offer of relocation assistance, the impact would be less than significant.

Level of Significance/Determination of Effects:

CEQA				NEPA		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
			AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants		
AQ-21: Generation of cumulative greenhouse gas emissions during construction of the proposed water conveyance facility (previously Impact AQ-15)	NAA	S		S	A
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	AQ-21: Develop and implement a GHG mitigation program to reduce construction related GHG emissions to net zero (0)	LTS	NA
AQ-22: Generation of cumulative greenhouse gas emissions from operation and maintenance of the proposed water conveyance facility and increased pumping (previously Impact AQ-16)	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-23: Generation of cumulative greenhouse gas emissions from increased CVP pumping as a result of implementation of CM1 (previously Impact AQ-17)	1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 4A, 5, 5A	S	No feasible mitigation to address this impact	SU	A
	NAA, 6A, 6B, 6C, 7, 8, 9	LTS		LTS	NA
AQ-24: Generation of regional criteria pollutants from implementation of CM2–CM11 (previously Impact AQ-18)	NAA	S		S	A
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to ensure air district regulations and recommended mitigation are incorporated into future conservation measures and associated project activities.	SU	A

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11 (new impact)	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to ensure air district regulations and recommended mitigation are incorporated into future conservation measures and associated project activities. AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce Potential Health Risks from Exposure to Localized DPM and PM Concentrations	LTS	NA
AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from Implementation of CM2–CM11	NAA, 1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	LTS		LTS	NA
AQ-27: Generation of cumulative greenhouse gas emissions from implementation of CM2–CM11 (previously Impact AQ-19)	NAA	S		S	A
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to ensure air district regulations and recommended mitigation are incorporated into future conservation measures and associated project activities. AQ-27 Prepare a land use sequestration analysis to quantify and mitigate (as needed) GHG flux associated with conservation measures and associated project activities	SU	A
Noise					
NOI-1: Exposure of noise-sensitive land uses to noise from construction of water conveyance facilities	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	NOI-1a: Employ noise-reducing construction practices during construction. NOI-1b: Prior to construction, initiate a complaint/response tracking program.	SU	A
NOI-2: Exposure of sensitive receptors to vibration or groundborne noise from construction of water conveyance facilities	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 2D, 4, 4A, 5A	S	NOI-2: Employ vibration-reducing construction practices during construction of water conveyance facilities.	SU	A
	NAA, 9	LTS		LTS	NA
NOI-3: Exposure of noise-sensitive land uses to noise from operation of water conveyance facilities	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	NOI-3: Design and construct intake facilities and other pump facilities such that operational noise does not exceed 50 dBA (one-hour L_{eq}) during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA (one-hour L_{eq}) during nighttime hours (10:00 p.m. to 7:00 a.m.) or the applicable local noise standard (whichever is less) at nearby noise sensitive land uses.	LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
NOI-4: Exposure of noise-sensitive land uses to noise from implementation of proposed Conservation Measures 2–10	NAA	LTS		LTS	NA
	1A, 1B, 1C, 2A, 2B, 2C, 3, 5, 6A, 6B, 6C, 7, 8, 9, 2D, 4, 4A, 5A	S	NOI-1a: Employ noise-reducing construction practices during construction. NOI-1b: Prior to construction, initiate a complaint/response tracking program.	SU	A
Hazards and Hazardous Materials					
HAZ-1: Create a substantial hazard to the public or the environment through the release of hazardous materials or by other means during construction of the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S		LTS	NA
HAZ-2: Expose sensitive receptors located within 0.25 miles of a construction site to hazardous materials, substances, or waste during construction of the water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
HAZ-3: Potential to conflict with a known hazardous materials site and, as a result, create a significant hazard to the public or the environment	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NE
HAZ-4: Result in a safety hazard associated with an airport or private airstrip within 2 miles of the water conveyance facilities footprint for people residing or working in the study area during construction of the water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
HAZ-5: Expose people or structures to a substantial risk of property loss, personal injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, as a result of construction, and operation and maintenance of the water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
HAZ-6: Create a substantial hazard to the public or the environment through the release of hazardous materials or by other means during operation and maintenance of the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S		LTS	
HAZ-7: Create a substantial hazard to the public or the environment through the release of hazardous materials or by other means as a result of implementing Conservation Measures CM2–CM11, CM13, CM14, CM16 and CM18	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S		LTS	NA
HAZ-8: Increased risk of bird – aircraft strikes during implementation of conservation components that create or improve wildlife habitat	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S		SU	A

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Public Health					
PH-1: Increase in vector-borne diseases as a result of construction and operation of the intakes, solids lagoons, and/or sediment basins associated with the water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-2: Exceedances of water quality criteria for constituents of concern such that there is an adverse effect on public health as a result of operation of the water conveyance facilities.	NAA	LTS		LTS	NA
	4	S	WQ-5: Avoid, minimize, or offset, as feasible, adverse water quality conditions.	SU[19]	A[31]
	2D, 4A, 5A	LTS		LTS	NA
PH-3: Substantial mobilization or increase in constituents known to bioaccumulate as a result of construction, operation or maintenance of the water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-4: Expose substantially more people to transmission lines generating new sources of EMFs as a result of the operation of the water conveyance facilities.	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-5: Increase in vector-borne diseases as a result of implementing CM2–CM7, CM10, and CM11	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-6: Substantial increase in recreationists' exposure to pathogens as a result of implementing the restoration conservation measures	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-7: Substantial mobilization of or increase in constituents known to bioaccumulate as a result of implementing CM2, CM4, CM5, and CM10	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
PH-8: Increase in Microcystis Bloom Formation as a Result of Operation of the Water Conveyance Facilities.	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	WQ-32a: Design Restoration Sites to Reduce Potential for Increased Microcystis Blooms. WQ-32b: Investigate and Implement Operational Measures to Manage Water Residence Time.	SU	A
PH-9: Increase in Microcystis Bloom Formation as a Result of Implementing CM2 and CM4.	4	S	WQ-32a: Design Restoration Sites to Reduce Potential for Increased Microcystis Blooms. WQ-32b: Investigate and Implement Operational Measures to Manage Water Residence Time.	SU	A
PH-9: Increase in *Microcystis* Bloom Formation as a Result of Implementing Environmental Commitment 4	NAA, 2D, 4A, 5A	LTS		LTS	NA

[19] This impact/effect would be less than significant/not adverse if all financial contributions, technical contributions, or partnerships required to avoid significant impacts prove feasible and any necessary agreements are completed before the project's contribution to the effect.

Level of Significance/Determination of Effects:

CEQA				**NEPA**		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Mineral Resources					
MIN-1: Loss of availability of locally important natural gas wells as a result of constructing the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NA
MIN-2: Loss of availability of extraction potential from natural gas fields as a result of constructing the water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
MIN-3: Loss of availability of locally important natural gas wells as a result of operation and maintenance of the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NA
MIN-4: Loss of availability of natural gas fields as a result of operation and maintenance of the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NA
MIN-5: Loss of availability of locally important natural gas wells as a result of implementing Conservation Measures 2–22	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	MIN-5: Design CM4, CM5, and CM10 to avoid displacement of active natural gas wells to the extent feasible	SU	A
MIN-6: Loss of availability of extraction potential from natural gas fields as a result of implementing Conservation Measures 2–22	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	S	MIN-6: Design CM4, CM5, and CM10 to maintain drilling access to natural gas fields to the extent feasible	SU	A
MIN-7: Loss of availability of locally important aggregate resource sites (mines and MRZs) as a result of constructing the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NE
MIN-8: Loss of availability of known aggregate resources as a result of constructing the proposed water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
MIN-9: Loss of availability of locally important aggregate resource sites (mines and MRZs) as a result of operation and maintenance of the water conveyance facilities	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	NI		NI	NE
MIN-10: Loss of availability of known aggregate resources as a result of operation and maintenance of the water conveyance facilities	NAA, 2D, 4, 4A, 5A	LTS		LTS	NA
MIN-11: Loss of availability of locally important aggregate resource sites (mines and MRZs) as a result of implementing Conservation Measures 2–22	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	LTS	MIN-11: Purchase affected aggregate materials for use in BDCP construction	LTS	NA
MIN-12: Loss of availability of known aggregate resources as a result of implementing Conservation Measures 2–22	NAA	LTS		LTS	NA
	2D, 4, 4A, 5A	LTS		LTS	NA

Level of Significance/Determination of Effects:

CEQA

SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)
LTS=less than significant
S=significant
NI=no impact
B=beneficial
ND=no determination
N/A=not applicable

NEPA

A=adverse
NA=not adverse
NE=no effect
B=beneficial
ND=no determination
N/A=not applicable

Potential Impact	Alternatives	Impact Conclusions Before Mitigation	Proposed Mitigation (CEQA and NEPA)	Impact After Mitigation	
		CEQA		CEQA	NEPA
Paleontological Resources					
PALEO-1: Destruction of unique or significant paleontological resources as a result of construction of water conveyance facilities.	NAA	S		S	A
	2D, 4, 4A, 5A	S	PALEO-1a: Prepare a monitoring and mitigation plan for paleontological resources PALEO-1b: Review 90% design submittal and develop specific language identifying how the mitigation measures will be implemented along the alignment PALEO-1c: Educate construction personnel in recognizing fossil material PALEO-1d: Collect and preserve substantial potentially unique or significant fossil remains when encountered	SU	A
PALEO-2: Destruction of unique or significant paleontological resources associated with the implementation of other conservation measures.	NAA	S		S	A
	2D, 4, 4A, 5A	S	PALEO-1a: Prepare a monitoring and mitigation plan for paleontological resources PALEO-1b: Review 90% design submittal and develop specific language identifying how the mitigation measures will be implemented along the alignment PALEO-1c: Educate construction personnel in recognizing fossil material PALEO-1d: Collect and preserve substantial potentially unique or significant fossil remains when encountered	LTS	NA

Level of Significance/Determination of Effects:

CEQA				**NEPA**		
SU=significant and unavoidable (any mitigation not sufficient to render impact less than significant)	LTS=less than significant S=significant	NI=no impact B=beneficial	ND=no determination N/A=not applicable	A=adverse NA=not adverse	NE=no effect B=beneficial	ND=no determination N/A=not applicable