Chapter 1
Executive Summary

1.1 Introduction

The State Water Resources Control Board's (State Water Board or Board) mission is to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use for the benefit of present and future generations. The State Water Board and Regional Water Quality Control Boards (collectively, Water Boards) prepare water quality control plans, or basin plans, to protect beneficial uses of water in the state pursuant to state and federal law. The State Water Board is responsible for adopting and updating the *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed* (Bay-Delta Plan or Plan) to protect beneficial uses of water in the San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) watershed related to water diversions and operations. The Bay-Delta Plan identifies beneficial uses of water to be protected in the Bay-Delta watershed; narrative and numeric, including flow and salinity, water quality objectives for the reasonable protection of those beneficial uses; a program of implementation to achieve the objectives; and monitoring, evaluation, and special study provisions to evaluate and inform planning and implementation.

The Bay-Delta watershed[1] is an integral part of California's environment, economy, and way of life. Protecting the Bay-Delta watershed and its many beneficial uses of water is one of the State Water Board's primary responsibilities and top priorities. In response to declines of several native aquatic species since the Bay-Delta Plan was last comprehensively updated, the State Water Board is in the process of updating and implementing the Bay-Delta Plan to provide for the reasonable protection of native fish and wildlife.

The State Water Board is considering amendments to the Bay-Delta Plan focused on the reasonable protection of fish and wildlife in the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), and Delta (referred to as the Sacramento/Delta watershed). This effort is referred to as the *Sacramento/Delta update to the Bay-Delta Plan*. The draft amendments to the Bay-Delta Plan are reflected in documents referred to as the "draft Plan" or "revised draft Plan." These amendments are the specific proposed changes to the text of the Sacramento/Delta portions of the Bay-Delta Plan. The draft updates to the Bay-Delta Plan are based on the alternatives described in this Staff Report. This Staff Report provides information on the potential benefits, environmental impacts, economic effects, and associated mitigation measures for possible alternatives for updating the Sacramento/Delta portions of the Bay-Delta Plan.

The underlying fundamental purpose of the Sacramento/Delta update to the Bay-Delta Plan is to establish water quality objectives, a program of implementation, and monitoring and special study

[1] A watershed, also called a *drainage basin* or *catchment*, is a land area that channels rainfall and snowmelt to creeks, streams, and rivers and eventually to outflow points such as reservoirs, bays, and the ocean. The size of a watershed can be appropriately defined on several scales (NOAA 2023). For example, the Delta watershed is fed by both the Sacramento and San Joaquin Rivers, two watersheds that are distinct in terms of precipitation, sources of snowmelt, and other features.

measures for the reasonable protection of fish and wildlife beneficial uses in the Sacramento/Delta.[2] The goals of the Sacramento/Delta update to the Bay-Delta Plan are to:

1. Provide an interconnected flow regime that provides for comprehensive protection for fish and wildlife from upstream natal Sacramento/Delta tributaries, through the Delta, and out to the ocean.
2. Provide flows, water quality, and other habitat conditions in the Sacramento/Delta that are sufficient to recover and maintain the natural production of viable native fish populations residing in and migrating through the Delta.
3. Provide flows of sufficient frequency, timing, magnitude, and duration necessary to achieve functions and processes essential to native fishes, such as improved tributary and in-Delta habitat conditions, improved temperature conditions, improved migratory conditions, and increased floodplain inundation, and promote habitat conditions that favor native fishes over nonnative fishes.
4. Provide for voluntary and default pathways with flexibility for establishing beneficial habitat conditions for native fishes, addressing scientific uncertainty and changing conditions, developing scientific information that will inform future management of flows, and meeting biological goals.
5. Promote transparency in decision-making to the regulated community, tribal nations, environmental justice communities, and other stakeholders.
6. Establish flow objectives to reasonably protect fish and wildlife that take into consideration all of the demands being made and to be made on waters in the Sacramento/Delta and the factors to be considered for establishing water quality objectives in Water Code section 13241. These factors include, but are not limited to, past, present, and probable future beneficial uses and economic considerations.
7. Provide for the development and implementation of a monitoring and evaluation program to inform adaptive management of flows and future changes to the Plan.
8. Provide for and encourage collaboration, coordination, and integration of regulatory, scientific, and management processes related to flows in the Sacramento/Delta.

The proposed project, referred to as the revised proposed Plan amendments, is evaluated in Chapter 13, *Revised Proposed Plan Amendments,* of this Staff Report. The revised proposed Plan amendments include a regulatory pathway based on the proposed Plan amendments described in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*, with modifications, and a voluntary agreement pathway (VA pathway) that would provide a pathway for implementation of VAs (also referred to as the Healthy Rivers and Landscapes [HRL] proposal) that were described and analyzed in Chapter 9, *Proposed Voluntary Agreements,* of the 2023 draft Staff Report. The pathways incorporate aspects of other alternatives that were evaluated in the 2023 draft Staff Report. The VA pathway would apply for the water rights included in the approved VA pathway, and the regulatory pathway would apply for water rights not included as part of the approved VA pathway, with both pathways having regulatory effect if adopted. The revised proposed Plan amendments also

[2] State CEQA Guidelines section 15124, subdivision (b), requires the lead agency to include a statement of the objectives sought by the proposed project. To avoid confusion with the term "objective" as it is used in reference to flow and other water quality objectives, this document will refer to the "objectives" mentioned in section 15124 instead as "goals."

incorporate Tribal Beneficial Uses (TBUs), would designate Tribal Tradition and Culture (CUL) beneficial use, and include provisions for tribal outreach and engagement and incorporation of tribal feedback and Traditional Ecological Knowledge (TEK) into the Bay-Delta Plan update and implementation processes. Additional provisions for developing an implementation methodology and other general provisions are included in the revised proposed Plan amendments, including requirements for monitoring, evaluation, reporting, and special studies; the development of biological goals; and annual and periodic review. The revised proposed Plan amendments are reflected in the final draft Plan that will be considered for adoption by the State Water Board.

The revised proposed Plan amendments were developed to improve flow and water quality conditions for fish and wildlife beneficial uses in the Sacramento/Delta. The State Water Board acknowledges that the Sacramento/Delta update to the Bay-Delta Plan has taken a significant amount of time due to the complexity of providing for the reasonable protection of fish and wildlife beneficial uses in this large and complex watershed that is integral to the ecosystem, tribal ways of life, the state's water supplies, and numerous other uses. The State Water Board has worked as expeditiously as possible to complete the update and move on to the critical step of implementation to move from the current more narrow implementation of the Plan by a few parties to broader implementation over the entire watershed, which has not historically occurred. The revised proposed Plan amendments contain needed flexibility to adaptively implement the flow and related requirements, and associated oversight and monitoring, evaluation, and review provisions which will allow the Plan to adjust in the future in annual and periodic review without having to start over with another lengthy update process.

Comments on the Staff Report and revised draft Bay-Delta Plan informed development of this final Staff Report and the final draft Bay-Delta Plan. This final Staff Report informs the State Water Board's consideration of adoption of the Sacramento/Delta updates to the Bay-Delta Plan. Some changes were made to the Plan amendments after the release of this final Staff Report that do not materially affect the analyses in this Staff Report.

1.2 Background

The Bay-Delta watershed encompasses California's two major river systems, the Sacramento and San Joaquin Rivers, as well as several other tributaries to those rivers, the Delta and tributaries, Suisun Marsh, and San Francisco Bay. The Bay-Delta watershed supports a variety of beneficial uses of water, including but not limited to: drinking water for more than two-thirds of Californians; irrigation to the largest agricultural economy in the United States; commercial and sport fishing; recreational opportunities in various waterways; and habitat in the largest estuarine ecosystem on the West Coast of the Americas which supports a diverse array of migratory and resident fish, birds, and other valued wildlife and plants. The Bay-Delta watershed is also home to numerous California Native American Tribes and small and large communities, including economically disadvantaged communities and black, Indigenous, and people of color communities. The Delta is the hub of California's water supply system, which is one of the most complex water conveyance systems in the country and serves as a source of water for the state's two largest water supply and delivery projects, as well as many other large and small diverters.

The Bay-Delta watershed includes the largest estuarine ecosystem on the West Coast of the Americas. The Delta is about 738,000 acres, of which about 48,000 acres are now open fresh water and the remainder is agricultural or urban, reflecting an almost complete loss of wetland habitats since California became a state (^Whipple et al. 2012). Suisun Marsh comprises approximately 85,000 acres of duck clubs, game refuges, and sloughs. Landforms in Suisun Marsh have changed

little from natural conditions, but salinities have generally risen (^Whipple et al. 2012). San Francisco Bay includes about 306,400 acres of open water, with almost half of its wetland habitats having been restored in the last 20 years (SFEP 2015).

The Bay-Delta watershed supports an exceptionally diverse array of migratory and resident fish, birds, and other valued wildlife and plants. The watershed is a crucial part of the Pacific Flyway. Some birds, including sandhill cranes, Canada geese, and snow geese, over-winter on flooded fields in the Delta and Sacramento Valley, while many other waterfowl rely on habitats in Suisun Marsh and San Francisco Bay. Migratory fish include green and white sturgeon; spring-run, winter-run, fall-run, and late fall-run Chinook salmon; and steelhead. These native species include ecologically, culturally, recreationally, and commercially important fisheries as well as fish that are relied upon for subsistence by tribes and local communities, as well as taxa listed under the California and federal Endangered Species Acts (CESA and ESA, respectively). Migratory fish must travel through large portions of the watershed to get to and from their spawning habitats, including salmon and steelhead that must travel from the ocean to the upper watershed. To migrate successfully, fish must find suitable habitats and withstand multiple stressors throughout the watershed. Almost all resident native fish species in the Bay-Delta have declined in abundance, particularly longfin smelt (listed under CESA) and Delta smelt (listed under both ESA and CESA). Two resident species have been extirpated: Sacramento perch and thicktail chub, primarily due to loss of suitable habitat. The most abundant fishes of the upper estuary are now introduced and do not rely on the habitats and conditions historically found in California. These nonnatives include striped bass, largemouth bass, and carp that were introduced for harvest and other species that invaded by various pathways. Habitat restoration and the effects of climate change are likely to further shift the abundance and distributions of species throughout the estuary in different ways (^Goals Project 2015).

1.2.1 Bay-Delta Water Quality Control Planning

The State Water Board has authority to adopt statewide water quality control plans and adopts the Bay-Delta Plan because of its ecological and water supply importance to the state. The Bay-Delta Plan largely addresses water diversions and use in the water quality control planning context, in accordance with the Porter-Cologne Water Quality Control Act (Porter-Cologne Act or Porter-Cologne) and other laws. Water quality objectives are established for the "reasonable protection of beneficial uses" under Porter-Cologne to ensure that the water is of *sufficient quality* to reasonably protect the use. Protecting water quality for fish and wildlife (as opposed to municipal, industrial, or agricultural beneficial uses) requires setting sufficient minimum instream flows because the water itself is habitat for aquatic species, and the quality of that habitat is degraded when water diversions reduce flow below the level where the water body can still support a functioning aquatic ecosystem. The State Water Board recognizes that providing instream flows for the environment necessarily results in less water available for other uses and requires careful consideration. The goal of the Porter-Cologne Act is to "attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." (Wat. Code, § 13000.)

The current Bay-Delta Plan flow-based water quality objectives that apply to the Sacramento/Delta watershed were established in 1995, based in part on an agreement between state and federal agencies regarding measures for ecosystem protection in the Bay-Delta estuary. The State Water Board updated the 1995 Bay-Delta Plan in 2006 with minor modifications. The Plan was most recently updated in 2018 to revise the lower San Joaquin River flow provisions for the reasonable

protection of fish and wildlife and southern Delta salinity provisions for the reasonable protection of agriculture.

The Bay-Delta Plan identifies various beneficial uses of water, including agricultural, municipal and industrial, and fish and wildlife, and narrative and numeric water quality objectives and implementation measures designed to reasonably protect those uses. Numeric objectives are expressed as flows, salinity (electrical conductivity [EC] or chloride), water project operations, and dissolved oxygen levels that are largely achieved through flows and State Water Project (SWP) and Central Valley Project (CVP) (collectively, Projects) operations. The Bay-Delta Plan also includes narrative fish and wildlife protection objectives for salmon and the Suisun Marsh. The Bay-Delta Plan includes a program of implementation identifying how the objectives will be achieved, including a description of actions necessary to achieve the objectives; a time schedule for taking the actions; and monitoring, evaluation, and reporting measures to determine compliance with the objectives and evaluate the effectiveness of implementation measures.

Currently, the Projects have primary responsibility for meeting Bay-Delta Plan objectives that apply to the Sacramento/Delta watershed, including existing Sacramento River inflow, Delta outflow, salinity, Project operational constraints, and other requirements. Under State Water Board Water Right Decision 1641 (D-1641), the State Water Board accepted various agreements between the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) and other water users to assume responsibility for meeting specified Bay-Delta Plan objectives for an indefinite period of time through conditions on DWR's and Reclamation's water rights for the SWP and CVP, respectively. The Sacramento/Delta updates to the Bay-Delta Plan do not modify DWR and Reclamation's responsibilities to continue to ensure that the specified objectives included in D-1641 are met.

1.2.2 Purpose and Need for Bay-Delta Plan Update

As described in Chapter 3, *Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations*, and Chapter 4, *Other Aquatic Ecosystem Stressors*, since the Bay-Delta Plan was last updated and implemented, populations of native aquatic species in the Bay-Delta watershed have shown significant signs of decline due to a combination of factors, including hydrologic modifications, non-flow physical habitat degradation, water quality impairments, and climate change.

Scientific information indicates that restorations of flows and the functions that flow provides in an integrated fashion with physical habitat improvements is needed to address the declines. Though various state and federal agencies have adopted requirements to protect the Bay-Delta ecosystem, the best available science supports a more comprehensive strategy. The current Sacramento/Delta Bay-Delta Plan objectives and implementation measures are minimal and focused on the Delta without considering instream flow needs within the tributaries and connecting those flows with the downstream watershed and Delta outflows. Most tributaries do not have instream flow requirements in the Bay-Delta Plan. Current conditions may be protective of fish and wildlife in some locations, but action is needed to ensure that conditions are not degraded in the future and that conditions in the Bay-Delta improve based on more complete and coordinated watershed management.

As described in Chapter 2, *Hydrology and Water Supply*, under current requirements, flows can be significantly reduced at certain times in some streams in the Sacramento/Delta watershed, along with significant reductions in Delta outflows, particularly in the winter and spring. At the same time,

dams in the watershed disconnect migratory corridors for native aquatic species, blocking access to significant portions of historical habitat. Total average annual unimpaired (without diversions and dams under current channel and infrastructure conditions) outflows from the Bay-Delta watershed are about 28.5 million acre-feet (MAF). Annual average outflows with diversions are a little more than half this amount at about 15.5 MAF, and outflows during the winter and spring from January through June are less than half. However, average regulatory minimum Delta outflows are only about 5 MAF, or about a third of current average outflows and less than 20 percent of average unimpaired outflows. Existing regulatory minimum Delta outflows would not be protective of the ecosystem, and without additional instream flow protections, existing flows may be reduced in the future, particularly with climate change and additional water development absent additional minimum instream flow requirements that ensure flows are preserved in stream when needed for the reasonable protection of fish and wildlife. In addition to instream flows, complementary habitat restoration can improve the effectiveness of instream flow measures at providing habitat conditions that support and promote recovery of native species populations.

1.2.3 Delta Reform Act and Delta Flow Criteria Report

The Sacramento-San Joaquin Delta Reform Act was adopted in 2009 (Delta Reform Act) (Wat. Code, § 85000 et seq.). The Delta Reform Act codified two coequal goals for the Delta of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem—both of which are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. To achieve this, the Delta Reform Act established the Delta Stewardship Council (DSC) and tasked the DSC with developing, adopting, and implementing an enforceable long-term plan for the Delta. DSC's Delta Plan (^DSC 2013) includes policies that are legally binding on covered activities as well as advisory recommendations.[3]

To inform planning decisions for the Delta Plan and other efforts, the Delta Reform Act required the State Water Board to develop flow criteria for the Delta ecosystem for the protection of public trust resources without considering other needs for water. In August 2010, the State Water Board completed a technical report on the *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem* (Delta Flow Criteria Report). The Delta Flow Criteria Report made a number of findings and identified specific criteria for inflows, outflows, and interior Delta flows if fishery protection was the sole purpose for which waters were put to beneficial use without considering the need for cold water reserves and balancing of supplies for other beneficial uses of water. The report noted that Delta waters support many other important beneficial uses, such as municipal, industrial, agricultural, hydropower, recreation, and other environmental uses such as wetlands and refuge water supplies that must be considered when determining regulatory flow requirements. The report noted that the State Water Board is required by law to establish flow and other requirements that ensure the reasonable protection of beneficial uses and that for any flow requirements to be reasonable, the State Water Board will consider and balance competing uses of water in its decision-making.

[3] The DSC has authority to ensure that covered actions – projects, plans, or programs that occur in the Delta and have a significant impact on achievement of the coequal goals – are consistent with the Delta Plan. (Wat. Code, §§ 85225, 85057.5.) The State Water Board's regulatory actions, including its water quality and water right proceedings, are exempt from the definition of covered actions and the DSC's consistency determinations. (*Id*., § 85057.5, subd. (b)(1).)

1.3 Development of Staff Report and Plan Amendments

Below is a summary of key actions that occurred during the environmental review and water quality control planning processes for the Sacramento/Delta update to the Bay-Delta Plan. This section also describes how the Plan amendments were refined over time based on input received throughout the planning process. Through the public comment process and other outreach, State Water Board staff received valuable input from many interested parties over multiple years that informed development of this final Staff Report and the proposed Sacramento/Delta updates to the Bay-Delta Plan. Chapter 12, *Public Participation*, provides a more detailed summary of the public participation activities that have occurred for the Sacramento/Delta update to the Bay-Delta Plan. Chapter 11, *Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses*, summarizes tribal outreach and engagement efforts related to the Sacramento/Delta update to the Bay-Delta Plan.

1.3.1 Scientific Basis Report and Framework

In October 2017, following public comment and peer review, the State Water Board finalized the *Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows* (2017 Scientific Basis Report) that describes the science supporting possible Sacramento/Delta updates to the Bay-Delta Plan that were under consideration at that time. The 2017 Scientific Basis Report supports the need for updates to the Bay-Delta Plan to provide for the reasonable protection of native fish and other aquatic species, including the need for updated inflows and outflows that work together in a comprehensive framework with other complementary actions to protect the Bay-Delta ecosystem.

Based on the 2017 Scientific Basis Report, in July 2018, the State Water Board released the *July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan* (2018 Framework) summarizing possible updates to the Bay-Delta Plan for Sacramento/Delta inflows, cold water habitat, Delta outflows, and interior Delta flows that were identified at that time (^SWRCB 2018a). The 2018 Framework included the following: new year-round inflow requirements for the Sacramento River, its tributaries, and eastside tributaries to the Delta (the Mokelumne, Calaveras and Cosumnes Rivers) of 55 percent of unimpaired flows, adaptively implemented within a range of 45 to 65 percent; tributary inflows protected as Delta outflows; new requirements for cold water habitat in the Sacramento River and Delta eastside tributaries; new and modified interior Delta flow requirements for Delta exports; recommendations for complementary ecosystem protection actions that others should take; and adaptive management, monitoring, evaluation, special study, and reporting provisions. The proposed Plan amendments that were evaluated in this Staff Report were based on the 2018 Framework as described further below in Section 1.3.3, *Draft Staff Report (September 2023)*.

1.3.2 Proposed VAs (Healthy Rivers and Landscapes) and Scientific Basis Report Supplement

In March 2022, the State Water Board received a *Memorandum of Understanding Advancing a Term Sheet for the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan, and Other Related Actions* (MOU). After the MOU was submitted and during the development of

the 2023 draft Staff Report, the voluntary agreements (VAs) were renamed Healthy Rivers and Landscapes (HRL) by the proponents. The MOU included signatories from state and federal agencies, local water agencies, private companies, and a non-profit mutual benefit corporation (collectively referred to in the MOU as "Parties," "public water agencies," or "PWAs"). In this Staff Report, these parties are referred to as "HRL participants." The term "VA pathway" is used to refer to the regulatory provisions in the Bay-Delta Plan that would allow for implementation of the HRL commitments, as described in more detail below. Though the State Water Board relied on HRL documents to help develop the VA pathway and language within Appendix B.1 of the Plan, the State Water Board is not a signatory to the MOU advanced by HRL participants and is not bound by its terms or any HRL documents unless such terms were explicitly included as provisions in the Bay-Delta Plan.

The HRL flow and non-flow measures described in the MOU were proposed by the HRL participants as an alternative for updating and implementing the Bay-Delta Plan to contribute to the reasonable protection of fish and wildlife beneficial uses. The State Water Board received two updates to the MOU in 2022 and two updates to the MOU in 2025. The changes to the MOU included updated flow and non-flow commitments. The HRL proposal includes a combination of flow and non-flow habitat restoration actions on the American, Feather, Sacramento, Yuba, Mokelumne and Bear Rivers; Putah Creek; Auburn Ravine; and in the Delta.

In support of the State Water Board's process of evaluating and considering the HRL proposal as an alternate pathway for protection of fish and wildlife as part of the Sacramento/Delta update to the Bay-Delta Plan, State Water Board staff, in collaboration with staff from DWR and California Department of Fish and Wildlife (CDFW), prepared a *Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan* (Scientific Basis Report Supplement). In January 2023, the State Water Board released a draft Scientific Basis Report Supplement that documents the science supporting anticipated benefits of the HRL flow and non-flow commitments and serves as a supplement to the 2017 Scientific Basis Report. Following receipt of public comments, the draft was revised and a final draft Scientific Basis Report Supplement was submitted for independent peer review in October 2023. In February 2024, the State Water Board received the peer review responses. State Water Board staff revised the Scientific Basis Report Supplement in collaboration with staff from CDFW and DWR in response to peer reviewers' comments and finalized the report in 2026. The final draft Scientific Basis Report Supplement was included with the 2023 draft Staff Report as Appendix G2, and the final Scientific Basis Report Supplement (2026 Scientific Basis Report Supplement) is included as an updated Appendix G2 to this final Staff Report.

1.3.3 Draft Staff Report (September 2023)

In September 2023, the State Water Board released a draft *Staff Report/Substitute Environmental Document in Support of Potential Sacramento/Delta Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and Its Tributaries, Delta Eastside Tributaries, and Delta* (2023 draft Staff Report). The 2023 draft Staff Report identified and evaluated proposed Plan amendments based on the 2018 Framework and identified the possible inclusion of a VA pathway for the HRL commitments, as well as other alternatives. While the updates to the Bay-Delta Plan identified in the 2018 Framework and described in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*, were

referred to as the proposed Plan amendments, the 2023 draft Staff Report also identified the possible inclusion of a VA pathway for the HRL commitments. A summary of the other alternatives considered in the Staff Report is included below under Section 1.5.4, *Alternatives Considered,* including several stand-alone alternatives as well as modular alternatives that could be layered onto the stand-alone alternatives.

The environmental analysis for the proposed Plan amendments and a description and analysis of other project alternatives under consideration were provided in Chapter 7, *Environmental Analysis*. The proposed Plan amendments described in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta,* included the following objectives and implementation measures for the protection of fish and wildlife: new year-round inflow requirements for the Sacramento River, its tributaries, and Delta eastside tributaries (the Cosumnes, Mokelumne, and Calaveras Rivers) that would require 55 percent unimpaired flow, with an adaptive range from 45 to 65 percent unimpaired flow to support salmonids and other native species within streams; tributary inflows protected as Delta outflows; new requirements for cold water habitat in the Sacramento River and Delta eastside tributaries; new and modified interior Delta flow requirements for Delta exports; recommendations for complementary ecosystem protection actions that others should take; and adaptive management, monitoring, evaluation, special study, and reporting provisions. Originally the numeric inflow provisions were largely contained in the objectives. The numeric provisions were later moved to the program of implementation and the objective was changed to become narrative and other changes were made to numeric and narrative provisions of the proposed Plan amendments as described in Chapter 13, *Revised Proposed Plan Amendments*, and further below.

The proposed VAs were described as Alternative 6 and were analyzed in Chapter 9, *Proposed Voluntary Agreements*, and include a combination of commitments over eight years (with the possibility of extension), including varying amounts of commitments to additive or modified tributary flows and Delta outflows, depending on water year type, and non-flow habitat restoration actions intended to improve conditions for native fish species. The flow and non-flow habitat restoration actions were proposed as implementation measures for an existing and a new narrative water quality objective in the Bay-Delta Plan, including: the existing narrative salmon protection objective (which the HRL participants propose to contribute to achieving by 2050); and a new narrative objective to achieve the viability of native fish populations proposed by the HRL participants. Since that time the VA pathway (described below) would also implement narrative inflow, cold water habitat, Delta outflow, and interior Delta flow objectives.

1.3.4 Draft Bay-Delta Plan (October 2024)

In October 2024, the State Water Board released for public review and comment a draft of possible updates to the Sacramento River watershed and Delta components of the Bay-Delta Plan, as well as other minor updates and edits to improve clarity and readability (2024 draft Plan). The 2024 draft Plan identified a regulatory pathway based on the proposed Plan amendments described in the 2023 draft Staff Report that included provisions for inflow, cold water habitat, and inflow-based Delta outflow, as well as other provisions. The 2024 draft Plan also included an option for a VA pathway, based on the proposed VAs evaluated in Chapter 9, *Proposed Voluntary Agreements*, that would allow for implementation of the HRL flow and non-flow commitments as an alternative pathway to implement certain water quality objectives for fish and wildlife beneficial uses.

The 2024 draft Plan identified possible inflow provisions under the regulatory pathway that would require 55 percent of unimpaired flow within an adaptive range of 45 to 65 percent of unimpaired

flow from the Sacramento River, its tributaries, and Delta eastside tributaries (the Calaveras, Cosumnes, and Mokelumne Rivers). The 2024 draft Plan also included proposed cold water habitat and carryover storage provisions that included requirements for reservoirs to be operated in a manner that provides cold water flows or alternate protective measures to ensure that fish below dams are kept in good condition. The 2024 draft also included proposed inflow-based Delta outflow provisions that would require that the required inflows from the Sacramento/Delta tributaries and San Joaquin River and tributaries be provided as outflows. In addition, the 2024 draft included a narrative interior Delta flow objective, without new numeric provisions for exports and Old and Middle River flows described in the proposed Plan amendments in the 2023 draft Staff Report (consistent with Modular Alternative 4a of the draft Staff Report). The 2024 draft Plan did include the proposed changes to the Delta Cross Channel gate requirements described in the 2023 draft Staff Report.

The 2024 draft Plan also included generally applicable provisions, including provisions for an implementation methodology, biological goals, monitoring and reporting, and annual and periodic review. The 2024 draft Plan also included the possibility of other options for updating the Bay-Delta Plan that were described in the 2023 draft Staff Report (e.g., an option for Modular Alternative 5a, Protection of Base Delta Outflow During Drought, and Modular Alternative 6a, Possible Alternatives for Protecting the VA Flow Base) with revisions based on public comments.

The 2024 draft Plan also incorporated Tribal and Subsistence Fishing Beneficial Uses including: Tribal Tradition and Culture (CUL), Tribal Subsistence Fishing (T-SUB), and Subsistence Fishing (SUB) beneficial uses as they relate to the reasonable protection of fish and wildlife. The 2024 draft Plan identified that the State Water Board was considering designation of CUL in the Bay-Delta watershed as part of the current update to the Bay-Delta Plan or through a subsequent appropriate process and specifically solicited public input on that decision.

1.3.5 Revised Draft Bay-Delta Plan (July 2025)

In July 2025, the State Water Board released a revised draft of updates to the Bay-Delta Plan (July 2025 revised draft Plan) that included changes to the 2024 draft Plan based on public input on the 2023 draft Staff Report and 2024 draft Plan, updated information submitted by HRL participants, and continued coordination with HRL participants. The July 2025 revised draft Plan incorporated the VA pathway for implementation of HRL commitments that would apply to HRL water rights in lieu of implementing other provisions for tributary inflow, cold water habitat, and inflow-based Delta outflows, and a regulatory pathway that would apply to water rights not included in the VA pathway and would also apply to HRL water rights in the event the VA pathway is discontinued. Both pathways would have regulatory effect upon adoption of Plan amendments.

The July 2025 revised draft Plan included revisions to the proposed new objectives from the 2024 draft Plan and 2023 draft Staff Report. The July 2025 revised draft included proposed narrative objectives that would be implemented through both the regulatory and VA pathways. The narrative objectives included the new narrative fish viability objective from the 2024 draft Plan and revisions to the other new narrative objectives as they were proposed in the 2024 draft Plan for tributary inflows, cold water habitat, Delta outflows, inflow-based Delta outflows, and interior Delta flows.

In the July 2025 revised draft Plan, the numeric portion of the Sacramento/Delta tributary inflow objective was relocated to the program of implementation as a numeric flow requirement applicable within the regulatory pathway. In addition, the numeric inflow provisions for the regulatory

pathway were changed from the 2024 draft Plan in response to public comments to include adjustments to the required percent of unimpaired flow based on hydrologic conditions during initial implementation of the Plan that would reduce water supply impacts and allow more water to be stored in reservoirs (referred to as water supply adjustments [WSAs] and described in more detail below in Section 1.3.6, *Revised Proposed Plan Amendments and Limited Recirculation of the Draft Staff Report (December 2025)*). Carryover storage requirements were adjusted in the July 2025 revised draft Plan to include a range of carryover storage levels and to allow reservoir owners and operators to propose carryover storage levels within or outside that range for State Water Board approval. The July 2025 revised draft Plan also included two new HRL proposals that were submitted to the State Water Board after the 2024 draft Plan was released. For the VA pathway, Appendix B.1 of the July 2025 revised draft Plan included partially developed accounting procedures for HRL commitments and a list of the water rights that would be part of the VA pathway.

The July 2025 revised draft Plan included the designation of CUL beneficial uses throughout the Bay-Delta watershed as they relate to the reasonable protection of fish and wildlife. The July 2025 revised draft Plan also included provisions for monitoring, assessment, and special studies, biological goals, developing an implementation methodology, and periodic and annual reviews. Some optional components of the 2024 draft Plan, such as the provision for Modular Alternative 5a, were not included in the July 2025 revised draft Plan.

The State Water Board delayed the public comment period on the July 2025 revised draft Plan to make further revisions and to coordinate receipt of public comments with the recirculated portions of the draft Staff Report.

1.3.6 Revised Proposed Plan Amendments and Limited Recirculation of the Draft Staff Report (December 2025)

In December 2025, the State Water Board released a revised draft of updates to the Bay-Delta Plan (December 2025 revised draft Plan) and a new Chapter 13, *Revised Proposed Plan Amendments*, of the Staff Report for public review and comment. The December 2025 revised draft Plan included refinements but the overall content and approach remained largely unchanged from the July 2025 revised draft Plan.

The State Water Board developed Chapter 13, *Revised Proposed Plan Amendments*, for a limited recirculation (2025 partially recirculated draft Staff Report) to provide clarifying information and further analysis of the revised proposed Plan amendments to ensure that the public had the opportunity for additional meaningful public review and comment. Chapter 13 evaluated the changes included in the December 2025 revised draft Plan and built upon the analyses of the proposed Plan amendments, the proposed VAs, and the alternatives presented in the 2023 draft Staff Report, with revisions. The regulatory pathway was based on the proposed Plan amendments described in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*, and analyzed in Chapter 6, *Changes in Hydrology and Water Supply*; Chapter 7, *Environmental Analysis*; and Chapter 8, *Economic Analysis and Other Considerations*, with changes, including incorporation of flows identified in the Low Flow Alternative (35 and 45 percent of unimpaired flow). The VA pathway was based on the proposed VAs analyzed in Chapter 9, *Proposed Voluntary Agreements*, with revisions, including changes to the water quality objectives that the VA pathway would implement, the addition of new HRL participants and associated commitments, and other refinements. The VA pathway would apply to the water rights included in the approved VA pathway,

and the regulatory pathway would apply to water rights not included as part of the approved VA pathway and if the VA pathway were discontinued.

The revised proposed Plan amendments also included the designation of the CUL beneficial use throughout the Bay-Delta watershed and general provisions that apply regardless of the regulatory or VA pathway, including the implementation methodology, monitoring and evaluation, and other provisions.

Under the regulatory pathway, the narrative objectives would be implemented by flow, cold water habitat, and related requirements described in the program of implementation. Under the VA pathway, the narrative objectives would be implemented by flow, habitat, and related HRL commitments that would become regulatory requirements after State Water Board adoption.

The regulatory pathway of the revised proposed Plan amendments would be the implementation pathway for water rights not covered by the VA pathway for the narrative inflow and cold water habitat objectives and the inflow-based Delta outflow objective. In response to public comments expressing concerns that the inflow requirements of the proposed Plan amendments would have significant water supply impacts and could result in drawing down reservoir storage, with associated temperature impacts, modifications to the starting point for the inflows under the regulatory pathway were incorporated into the revised proposed Plan amendments that reduce water supply impacts and allow more water to be stored in reservoirs at the outset of Plan implementation. These modifications are referred to as water supply adjustments (WSAs) and provide for lowering the required percent of unimpaired flow during all but the wettest hydrologic conditions down to 45 or 35 percent of unimpaired flow, with additional tributary specific water supply adjustments for three rainfall and municipal supply dominated tributaries (the Mokelumne and Calaveras Rivers and Putah Creek).

Under the VA pathway of the revised proposed Plan amendments, HRL participants would provide a combination of increased flows, depending on water year type, and non-flow habitat restoration actions aimed at improving spawning and rearing capacity for salmonids, estuarine species, and other native fish and wildlife. Draft accounting provisions for the flow and non-flow measures proposed to be provided under the VA pathway were included in Appendices B.1 and B.2 of the December 2025 revised draft Plan.

1.3.7 Final Draft Bay-Delta Plan and Final Staff Report (August 2026)

In August 2026, the State Water Board released a final draft Bay-Delta Plan that included refinements to the revised proposed Plan amendments based on public comments received on the December 2025 revised draft Plan. At the same time, the State Water Board released this final Staff Report, including responses to comments previously received on the draft Staff Report and 2025 partially recirculated draft Staff Report. Section 1.4, *Organization of the Staff Report*, describes the contents of the final Staff Report, including changes made since the release of the 2023 draft Staff Report and 2025 partially recirculated draft Staff Report.

The final draft Plan includes the following primary revisions:

- Clarifications that the VA pathway and water supply adjustments do not apply to new water supply projects.[4] However, as part of the annual or periodic review process, the State Water Board could consider whether to apply water supply adjustments or the VA pathway to new water supply projects based on any necessary supporting environmental and scientific documentation.
- The regulatory pathway flow shaping provisions now allow for flows documented to provide for the purpose of protecting fish and wildlife and Delta outflow to reduce the required inflow levels.
- The regulatory pathway cold water habitat implementation measures now require State Water Board approval (instead of Executive Director approval) for required adjustments to carryover storage requirements, proposed requirements outside the defined range, or Board-developed carryover storage requirements.
- Additional considerations have been added to the implementation methodology, including the development of methods to avoid redirected impacts to water right holders in the event of non-compliance by other water right holders, consideration of operational rules for reservoir management (e.g., ramping rates), and integration of adaptive implementation provisions.
- Previously proposed changes to the closure periods for the Delta Cross Channel gate objective have been removed; however, updates are retained to the Delta Cross Channel gate decision-making process.
- The start date for the VA pathway has been extended to October 1, 2027 and the time period for which this could be extended was reduced to 3 months.
- Appendix B.1 includes the addition of new HRL water rights requested by HRL participants.
- A new base flow balancing provision (described further below) is included in the VA pathway to require a commensurate increase in HRL flow commitments to address any operational changes of the SWP or CVP that result in a substantial reduction in Delta outflow compared to the base flows upon which the HRL flows were assumed to be additive.
- The approval process for proposals to release HRL flows outside of the flexibility brackets, or in a manner that would result in less HRL flows during January through June than the default schedule, has been modified to reduce the required submission date from 90 to 30 days in advance of proposed operations and replace the public comment period with a requirement for DFW approval.
- New incremental milestones are included for the HRL habitat restoration commitments that could be used to assess progress throughout the initial 8-year term of the VA pathway.
- The HRL commitment for fish food production actions has been converted into an optional special study.
- An expanded list of topics is included for consideration by the State Water Board during periodic reviews.

[4] New water supply projects are defined as 1) water rights obtained after December 31, 2025, including any permits issued after that date pursuant to applications filed by the State under Water Code section 10500, and 2) water right change petitions that would increase diversions from the Delta watershed and decrease Delta outflows compared to conditions existing as of December 31, 2025.

- Other changes, including more minor changes to Plan provisions and non-substantive clarifying edits.

Additional information on the revised proposed Plan amendments is provided in Section 13.3, *Revised Proposed Plan Amendments*.

In December 2025, at nearly the same time that the State Water Board released Chapter 13, *Revised Proposed Plan Amendments*, of the 2025 partially recirculated draft Staff Report and the December 2025 revised draft Plan, Reclamation modified operational constraints included in the Record of Decision (ROD) for the Long-Term Operations (LTO) of the CVP and SWP pursuant to direction included in Action 5 of federal Executive Order 14181. In addition to the 2025 LTO ROD changes, two amendments to the CDFW Incidental Take Permit (ITP) issued for SWP operations pursuant to the CESA were approved in 2025 to change requirements for SWP operations. In July 2026, CDFW approved an additional one-year modification to the ITP. CDFW is continuing to process a 2026 ITP amendment request from DWR for a permanent amendment to the ITP and expects to make its decision on the request by December 2026. The 2025 LTO ROD and 2025 CDFW ITP changes are referred to collectively as the 2025 ROD/ITP.

The HRL flows are intended to be additive to required flows under D-1641 and resulting flows under the 2024 LTO ROD and 2024 National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) Biological Opinions (BiOps) rather than the 2025 ROD/ITP. As such, because changes under the 2025 ROD/ITP could reduce the base upon which the HRL flow commitments are intended to be added, the final draft Plan includes a new provision (referred to as the base flow balancing provision for CVP/SWP operations or LTO base flow balancing provision) that requires an increase in HRL flow commitments to make up for reductions in Delta outflows caused by changes in SWP and CVP operations compared to base conditions analyzed in the Staff Report and Scientific Basis Report Supplement in support of the VA pathway. In addition to the addition of the LTO base flow balancing provision, Chapter 13 includes updated analyses related to this matter.

1.4 Organization of the Staff Report

This Staff Report includes information and analyses to support the State Water Board's planning and decision making on possible Sacramento/Delta updates to the Bay-Delta Plan, including scientific, hydrologic, modeling, environmental, and economic analyses and other information and analyses, including requirements of the Porter-Cologne Act (Wat. Code, § 13000 et seq.). The State Water Board adopts water quality control plans as part of a certified regulatory program under the California Environmental Quality Act (CEQA). (Pub. Resources Code, § 21080.5, subd. (b)(2); Cal. Code Regs., tit. 23, § 3775 et seq.) Certified regulatory programs are exempt from CEQA's requirements for preparing an environmental impact report, negative declaration, and/or initial study. (Pub. Resources Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251, subd, (g).) Accordingly, the State Water Board may prepare a substitute environmental document (SED) that meets the requirements of CEQA. (Cal. Code Regs., tit. 14, § 15252, subd, (a).)

This entire Staff Report can be considered the SED that fulfills the requirements of CEQA and the State Water Board's CEQA regulations (Cal. Code Regs., tit. 23, § 3775 et seq.) to analyze the environmental effects of the proposed regulatory activity. The majority of the environmental analyses and conclusions are presented in Chapters 7, 9, and 13. The Staff Report will inform the

State Water Board's consideration of the Sacramento/Delta updates to the Bay-Delta Plan described within this document.

This Staff Report incorporates portions of the 2017 Scientific Basis Report and the 2026 Scientific Basis Report Supplement in various chapters. The full reports are also appendices to this Staff Report. The 2023 draft Staff Report included Chapters 1 through 12 and Appendices A through G. The 2023 draft Staff Report assessed a range of alternatives, including the proposed Plan amendments at the time the 2023 draft Staff Report was released based on the State Water Board's 2018 Framework that was identified prior to the HRL proposal, and proposed VAs as articulated in 2023. The 2023 draft Staff Report included the description of the proposed Plan amendments in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*. The environmental analysis for the proposed Plan amendments and a description and analysis of other project alternatives was provided in Chapter 7, *Environmental Analysis*. As discussed above, because the State Water Board received the proposed VAs after much of the 2023 draft Staff Report had been prepared, the proposed VAs were described and analyzed separately in Chapter 9, *Proposed Voluntary Agreements*.

As discussed above, in December 2025, the State Water Board released a new Chapter 13, *Revised Proposed Plan Amendments*, as a limited recirculation of the 2023 draft Staff Report together with the December 2025 revised draft Plan for public review and comment. The analysis of the revised proposed Plan amendments presented in Chapter 13 builds upon the analysis of the proposed Plan amendments, the proposed VAs, and the alternatives presented in the 2023 draft Staff Report, with revisions. Appendices H1 through H3 were also released in December 2025 to accompany Chapter 13.

This final Staff Report contains the chapters and appendices that were included in the 2023 draft Staff Report and 2025 partially recirculated draft Staff Report, with updated information and new content where appropriate. A list of the chapters and appendices included in this Staff Report are summarized below, including changes to the Staff Report that occurred following the release of the 2023 draft Staff Report and 2025 partially recirculated draft Staff Report for public review and comment. Minor editorial changes, corrections, and clarifying edits have been applied throughout the Staff Report where appropriate, in addition to the specific changes described below for several chapters, sections, and appendices.

Volume 1 of the Staff Report contains the following chapters that have been updated to various degrees to address public comments.

- Chapter 1, *Executive Summary,* explains the Staff Report purpose and organization, and provides a summary of its major findings. Chapter 1 also provides background on the Sacramento/Delta update to the Bay-Delta Plan, including the multi-year public process that has informed this final Staff Report and final draft Bay-Delta Plan. Other chapters of the Staff Report inform the environmental analyses and contain additional details on specific topics. Chapter 1 has been updated with current information on the proposed project, the organization of the Staff Report, background and timeline of key actions, and the environmental analysis.
- Chapter 2, *Hydrology and Water Supply,* describes the flow regime within the Sacramento/Delta watershed, including how the magnitude, frequency, duration, timing, and rate of change of flows have been altered, and presents an overview of California's water rights system and water supply portfolios. This chapter remains very similar to the version included in the 2023 draft Staff Report.

- Chapter 3, *Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations*, provides a review and summary of the best available science on flow needs for the protection of fish and wildlife beneficial uses. This chapter has been updated to include current ecological flow thresholds for salmon, a new summer flow threshold for Delta smelt, and an evaluation of the frequency of achieving those thresholds under the flow scenarios. In addition, this chapter has been updated to incorporate more recent literature that demonstrates flow-abundance relationships remain strong for key species, such as longfin smelt.
- Chapter 4, *Other Aquatic Ecosystem Stressors*, summarizes other aquatic ecosystem stressors (e.g., loss of habitat, invasive species, and water quality pollutants) in the Bay-Delta watershed and how those stressors interact in the ecosystem. This chapter has been updated with an expanded discussion of methylmercury and food webs in floodplains, the effects of flows on nonnative species, and the effectiveness of predator removal. This chapter has also been updated to incorporate recent literature on climate change, harmful algal blooms (HABs), and effects of ammonia on phytoplankton.
- Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*, includes a description and discussion of the proposed Plan amendments as described at the time that the 2023 draft Staff Report was released for public review and comment. This chapter has not been significantly updated given that it remains the description of the proposed Plan amendments. The revised proposed Plan amendments reflected in the final draft Bay-Delta Plan as modified from those described in Chapter 5 are described in Chapter 13, *Revised Proposed Plan Amendments*.
- Chapter 6, *Changes in Hydrology and Water Supply*, presents Sacramento Water Allocation Model (SacWAM) output in a range of potential instream flow changes in increments of 10 percent, from 35 percent up to 75 percent unimpaired flow (referred to as *scenarios*), and describes other water management actions, including groundwater storage and recovery, water transfers, water recycling, and conservation measures. The SacWAM results for changes in hydrology and water supply presented in Chapter 6 were produced using SacWAM version 2023.06.12 to support the 2023 draft Staff Report and have not been updated. Updated modeling results for the revised proposed Plan amendments are described Section 13.4, *Changes in Hydrology and Water Supply*, and associated appendices described in Chapter 13, *Revised Proposed Plan Amendments*.
- Chapter 7, *Environmental Analysis,* presents the approach to the environmental analysis; a description of alternatives and alternatives analysis; environmental analyses of proposed Plan amendments for all resource topics; an evaluation of habitat restoration and other ecosystem projects, as well as new or modified facilities; and an analysis of cumulative impacts, growth-inducing impacts, and significant irreversible environmental changes. Much of the information presented in this chapter, including the project purposes and goals, the plan area and study area,[5] the approach to the environmental analyses, and the environmental setting for each resource area, remain applicable to the revised proposed Plan amendments and any changes are described in Chapter 13, *Revised Proposed Plan Amendments*.
- Chapter 8, *Economic Analysis and Other Considerations*, evaluates economics effects associated with the proposed Plan amendments. This chapter has been updated to include new content in

[5] As described in Section 13.7.1, *Approach*, the Trinity River has been added to the study area (see Section 13.7.1.2, *Summary of Revisions*, for additional information on the Trinity River).

response to comments received on the 2023 draft Staff Report, including a new Section 8.6, *Fisheries Economic Analysis*, that addresses potential economic benefits from implementation of the flow scenarios and subsequent aquatic ecosystem improvements and benefits for native fish species. This new section provides additional context and information concerning beneficial fisheries and ecosystem economic effects but does not change the conclusions of the Staff Report's economic analysis.

- Chapter 9, *Proposed Voluntary Agreements*, describes the proposed VAs and describes them as a possible option for the Sacramento/Delta update to the Bay-Delta Plan reflecting the circumstances at the time that the 2023 draft Staff Report was released for public review and comment. However, the current articulation of the VA pathway under the revised proposed Plan amendments is provided in Chapter 13, *Revised Proposed Plan Amendments*. Chapter 9 provides model results and an evaluation of potential environmental impacts of the proposed VA alternative for all resource topics. This chapter relies on the environmental analyses presented in Chapter 7, *Environmental Analysis*, where possible for efficiency and to avoid redundancy. The economic effects of the proposed VAs are also evaluated in this chapter.
- Chapter 10, *Economically Disadvantaged Communities*, provides an overview of economically disadvantaged communities (DAC) and their water supplies, discusses potential effects of the project on DACs and small public water systems, and incorporates information from several other sections and chapters to identify potential effects on DACs. This chapter also discusses relevant State Water Board financial and technical assistance programs to provide safe, clean, and reliable water supplies to DACs. In response to comments, Chapter 10 has been updated with a new section describing HABs and DACs and to revise outdated information in several locations, but this chapter remains similar to the version included in the 2023 draft Staff Report.
- Chapter 11, *Tribal Engagement, Traditional Ecological Knowledge, and Tribal Beneficial Uses,* summarizes tribal engagement activities and input received related to the Sacramento/Delta update to the Bay-Delta Plan, including tribal input requesting the incorporation of traditional ecological knowledge (TEK) and addition of TBUs to the Bay-Delta Plan. Chapter 11 also provides a summary of TEK from tribes in the Bay-Delta watershed. The title of this chapter has been revised to more accurately describe the covered topics. In addition, this chapter has been updated to provide a summary of the tribal outreach and engagement activities that occurred following the release of the 2023 draft Staff Report, and to provide new and expanded discussions on several topics related to tribes, such as water rights, HABs, and the proposed designation of CUL and incorporation of T-SUB and SUB beneficial uses in the Bay-Delta Plan.
- Chapter 12, *Public Participation*, summarizes the public participation activities that occurred during the environmental review and water quality control planning processes for the Sacramento/Delta update to the Bay-Delta Plan. This chapter has been updated to include a summary of the public participation activities that occurred following the release of the 2023 draft Staff Report.
- Chapter 13, *Revised Proposed Plan Amendments*, provides the background for the planning process, a description of the revised proposed Plan amendments, and the analyses of the expected changes in hydrology and water supply, economic effects, beneficial environmental effects, and an analysis of potential environmental impacts under the revised proposed Plan amendments. Chapter 13 also includes Water Code section 13241 and public trust analyses. For efficiency and to avoid redundancy, Chapter 13 references the environmental analyses, impact determinations, and associated mitigation measures from the 2023 draft Staff Report Chapters 7

and 9, and the economic analyses from Chapters 8 and 9 where applicable. Chapter 13 has been updated from the 2025 partially recirculated draft Staff Report to include new information and analyses in several locations.

- New content has been added to Section 13.1, *Introduction*, that summarizes updates to Chapter 13 following release of the 2025 partially recirculated draft Staff Report.
- Section 13.3, *Revised Proposed Plan Amendments*, describes the revised proposed Plan amendments, including the regulatory pathway, the VA pathway, and other generally applicable requirements identified in the revised proposed Plan amendments. Several changes have been made to the revised proposed Plan amendments that are summarized in this section and that have been incorporated into the final draft Bay-Delta Plan.
- A new Section 13.7.1.4, *Alternatives Analysis*, has been added to the Staff Report that compares the environmental impacts of the revised proposed Plan amendments to the environmental impacts of the proposed Plan amendments and each other stand-alone alternative evaluated in the Staff Report. This comparison supplements the analysis provided in Section 7.24, *Alternatives Analysis*. Section 13.7.1.4 also includes refinements of the description of the environmentally superior alternative.
- Several sections have been updated with new information about the possible changes that could occur under the revised proposed Plan amendments in combination with the 2025 ROD/ITP, including Section 13.4, *Changes in Hydrology and Water Supply*, Section 13.5, *Beneficial Environmental Effects*, and relevant resources areas described in Section 13.7, *Environmental Analysis*.

Volume 2 of the Staff Report contains the following appendices.

- Appendix A, *Modeling for the Unimpaired Flow Scenarios*, contains modeling related documentation and results for the unimpaired flow scenarios. This appendix remains very similar to the version included in the 2023 draft Staff Report, but has been revised with minor clarifying edits and corrections.
- Appendix B, *Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows*, contains the 2017 Scientific Basis Report in support of the Sacramento/Delta updates to the Bay-Delta Plan. The 2017 Scientific Basis Report is a final report that has not been revised since the release of the 2023 draft Staff Report.
- Appendix C, *Supplemental Special-Status Species Lists for Plants and Wildlife*, provides lists of special-status plant and wildlife species to supplement information presented in Section 7.6.1, *Terrestrial Biological Resources*. The supplemental special-status species lists for plants and wildlife provided in Appendix C are the same as those presented in the 2023 draft Staff Report.
- Appendix D, *Supplemental Municipal Supply Analysis Information*, contains supplemental material supporting the analysis of the potential effects of new and revised flow requirements on municipalities. This appendix remains very similar to the version included in the 2023 draft Staff Report, but has been revised with minor clarifying edits.
- Appendix E, *Regulatory Framework for Construction Projects*, provides an overview of key federal, state, and local laws, policies, and regulations applicable to construction projects in general that could effectively avoid or minimize impacts of typical construction activities. This appendix is intended to support the impact analyses in Section 7.21, *Habitat Restoration and*

Other Ecosystem Projects, and Section 7.22, *New or Modified Facilities*. This appendix remains very similar to the version included in the 2023 draft Staff Report.

- Appendix F, *Impact Summary Tables for Alternatives 1, 2, and 3*, presents impact summary tables that detail the potential environmental impacts of the No Project Alternative (Alternative 1), Low Flow Alternative (Alternative 2), and High Flow Alternative (Alternative 3) on various environmental resource areas. Mitigation measures that could reduce potentially significant impacts are detailed in Sections 7.3 through 7.20. Although this appendix remains very similar to the version included in the 2023 draft Staff Report, clarifying edits and corrections have been applied that do not affect the conclusions of the Staff Report's analysis.
- Appendix G, *Appendices for Chapter 9, Proposed Voluntary Agreements*, contains several appendices related to the HRL proposal.
    - Appendix G1, *Voluntary Agreement Proposal*, in the 2023 draft Staff Report contained copies of VA documents available in September 2023. The HRL participants have since submitted new and updated documents to the State Water Board some of which are still in the process of being updated over time. The contents of Appendix G1 have been removed and replaced with documentation to explain that current and prior versions of updated VA documents are available on the State Water Board's website and also available on the California Natural Resources Agency's website.
    - Appendix G2, *Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan*, in the 2023 draft Staff Report contained the 2023 final draft Scientific Basis Report Supplement in support of the VA pathway. The Scientific Basis Report Supplement has since been revised and finalized in response to comments from external scientific peer reviewers. The contents of Appendix G2 have been replaced with the finalized 2026 Scientific Basis Report Supplement.
    - Appendix G3, *Modeling for the Proposed Voluntary Agreements*, contains modeling results for the proposed VAs, including in Appendix G3a, *Sacramento Water Allocation Model Methods and Results for the Proposed Voluntary Agreements*; Appendix G3b, *Delta Simulation Model II (DSM2) Methods and Results for the Proposed Voluntary Agreements*; Appendix G3c, *Economic Considerations for the Proposed Voluntary Agreements*; Appendix G3d, *Hydropower, Energy Grid, and Export Energy Analyses for the Proposed Voluntary Agreements*; and Appendix G3e, *Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers for the Proposed Voluntary Agreements*. Appendix G3 remains very similar to the version included in the 2023 draft Staff Report.
    - Appendix G4, *Environmental Checklist for the Proposed Voluntary Agreements*, presents the completed Environmental Checklists for the potential impacts that may occur under the proposed VAs as evaluated in Chapter 9, *Proposed Voluntary Agreements*. Although this appendix remains very similar to the version included in the 2023 draft Staff Report, clarifying edits and corrections have been applied that do not affect the conclusions of the Staff Report's analysis.
- Appendix H1, *Sacramento Water Allocation Model Methods and Results for the Revised Proposed Plan Amendments*, contains modeling results that accompany Chapter 13, *Revised Proposed Plan Amendments*.

- Appendix H1a, *Sacramento Water Allocation Model Methods*, contains documentation of SacWAM methods relevant to the analysis in Chapter 13, and results are presented in Appendix H1a1, *Assessment of Effect of Reservoir Storage on Reservoir Release Temperatures*; Appendix H1a2, *Sacramento Water Allocation Model Results for Revised Proposed Plan Amendments*; Appendix H1a3, *Sacramento Water Allocation Model Results for Updated Unimpaired Flow Scenarios*; Appendix H1a4, *Sacramento Water Allocation Model Results for Central Valley Project Export Constraint Sensitivity Analysis*; and Appendix H1a5, *Sacramento Water Allocation Model Results for Export Constraint Sensitivity Analysis*. These appendices remain very similar to the versions included in the 2025 partially recirculated draft Staff Report.

  Two new appendices, Appendix H1a6, *Sensitivity Analysis for 2025 Record of Decision and Incidental Take Permit Amendments*, and Appendix H1a7, *Sacramento Water Allocation Model Results for 2025 Record of Decision and Incidental Take Permit Amendments*, have been added that present SacWAM results for the revised proposed Plan amendments in combination with the 2025 ROD/ITP, and new temperature modeling results for the revised proposed Plan amendments in combination with the 2025 ROD/ITP.

- Appendix H1b, *Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, American, and Yuba Rivers*, includes information related to temperature modeling and fish specific assessments specific to the revised proposed Plan amendments. Appendix H1b remains very similar to the version included in the 2025 partially recirculated draft Staff Report.

- Appendix H1c, *Beneficial Environmental Effects*, contains salmonid tributary habitat analysis methods and results. The modeling results presented in Appendix H1c are the same as those included in the 2025 partially recirculated draft Staff Report. However, a new Section H1c.3, *Flow Threshold Analysis Supplemental Results*, has been added to this appendix that provides results of the updated flow thresholds for the 35, 45, 55, and 65 scenarios using the updated modeling described in Appendix H1a3, *Sacramento Water Allocation Model Results for Updated Unimpaired Flow Scenarios*. In addition, the title of this appendix has been revised.

- Appendix H2, *Environmental Checklists for the Revised Proposed Plan Amendments*, presents the completed Environmental Checklists for the potential impacts that may occur under the revised proposed Plan amendments. Appendix H2 remains very similar to the version included in the draft Staff Report.
- Appendix H3, *Mitigation Measures for the Revised Proposed Plan Amendments*, presents the mitigation measures identified to avoid or reduce the potentially significant impacts that may occur under the revised proposed Plan amendments, including reasonably foreseeable compliance measures and response actions. Several changes have been applied to this appendix, but these changes do not change the conclusions of the Staff Report's analysis.
- Appendix H4, *Impact Summary Table for Alternatives*, has been added to the Staff Report to compare the environmental impacts of the revised proposed Plan amendments to the proposed Plan amendments and each stand-alone alternative evaluated in the draft Staff Report. This appendix accompanies new Section 13.7.1.4, *Alternatives Analysis*.

Volume 3 of the Staff Report provides responses to all written and oral comments received on the 2023 draft Staff Report, 2025 partially recirculated draft Staff Report, and December 2025 revised draft Plan. In addition, Volume 3 contains written responses to comments on the July 2025 revised

draft Plan. Although the State Water Board delayed the comment period on the July 2025 revised draft Plan to make additional refinements to the Plan and coordinate the public process with the December 2025 limited recirculation of the draft Staff Report, several written comment letters were received on the July 2025 revised draft Plan. Volume 3 includes the following chapters.

- Chapter 1, *Introduction to Responses to Comments*, describes the format, content, and organization of Volume 3.
- Chapter 2, *Common Responses*, contains an introduction with a summary table identifying common responses that were prepared to provide responses to frequently raised topics, themes, or issues to avoid repetition and provide a comprehensive response. Each common response provides a brief overview of the topics, issues, or themes the common response addresses, a table of contents to orient the reader to specific subtopics, followed by responses.
- Chapter 3, *Indices of Commenters*, provides a list of the commenter letter numbers and the names, organizations, and titles of commenters.
- Chapter 4, *Responses to Comments Tables*, presents comments and responses in a tabular format organized in numerical order. Comment letters, emails, and other written or transcribed comments were assigned an identifying letter number as they were received and processed.

1.5 Environmental Analysis

State Water Board regulations (Cal. Code. Regs., tit. 23, § 3777) require that any water quality control plan proposed for approval or adoption be accompanied by environmental documentation. The State Water Board's water quality control planning program is certified by the Secretary of the California Natural Resources Agency as exempt from CEQA's requirements for the preparation of environmental impact reports, negative declarations, and initial studies (Pub. Resources Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251, subd. (g)). Agencies qualifying for such exemptions must still comply with CEQA's goals and policies, including the policy of avoiding significant adverse effects on the environment where feasible.

Pursuant to California Code of Regulations, title 23, section 3777, subdivision (b), the environmental documentation must include:

(1) A brief description of the proposed project;

(2) An identification of any significant or potentially significant adverse environmental impacts of the proposed project;

(3) An analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and

(4) An environmental analysis of the reasonably foreseeable methods of compliance. The environmental analysis shall include, at a minimum, all of the following:

(A) An identification of the reasonably foreseeable methods of compliance with the project;

(B) An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;

(C) An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and

(D) An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance.

CEQA's basic purposes are to: (1) inform governmental decision makers and the public about the potential significant environmental effects of proposed activities; (2) identify ways that environmental damage can be avoided or significantly reduced; (3) prevent significant avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and (4) disclose to the public why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved. (Cal. Code Regs., tit. 14, § 15002, subd. (a).) To fulfill these functions, an evaluation of the environmental effects need not be exhaustive, but the sufficiency of an environmental analysis is to be reviewed in light of what is reasonably feasible and CEQA documents need not be perfect. CEQA documents should be adequate, complete, and represent a good-faith effort at full disclosure. (*Id*., § 15151.)

This Staff Report was prepared to analyze the potential environmental impacts of adopting and implementing possible Sacramento/Delta updates to the Bay-Delta Plan. This Staff Report includes identification of significant or potentially significant adverse environmental impacts of the project alternatives, mitigation measures to avoid or reduce impacts, environmental analysis of the reasonably foreseeable methods of compliance, and other analyses and documents. This Staff Report identifies potentially significant environmental impacts of possible Sacramento/Delta updates to the Bay-Delta Plan in the watersheds in which Sacramento/Delta flows originate and in the areas in which Sacramento/Delta water is used or from which water is imported. This Staff Report also includes an analysis of the economic effects that could result from possible Sacramento/Delta updates to the Bay-Delta Plan.

1.5.1 Sacramento/Delta Watershed, Plan Area, and Study Area

The State Water Board is considering amendments to the Bay-Delta Plan focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Cosumnes, Mokelumne, and Calaveras Rivers), Delta outflows, and interior Delta flows in order to reasonably protect fish and wildlife beneficial uses. This area is referred to as the *Sacramento/Delta watershed* or *Sacramento/Delta*. Tributaries in the Sacramento/Delta watershed are shown on Figure 1-1a and described in detail in Chapter 2, *Hydrology and Water Supply*.

The *plan area* includes the Sacramento/Delta and continues west as water flows through the Delta and downstream through Suisun Marsh and adjoining bays, marking the brackish transition from fresh water to salt water and out to the Pacific Ocean. The plan area encompasses the areas where possible Sacramento/Delta Plan amendments may apply and the ecosystem that the Plan is intended to protect. Figure 1-1b shows the plan area boundary.

Water from the Sacramento/Delta is delivered to and used in portions of the San Francisco Bay Area, San Joaquin Valley, Central Coast, and Southern California regions. Therefore, a larger *study area* is also defined to ensure that environmental and economic impacts are evaluated in all areas where

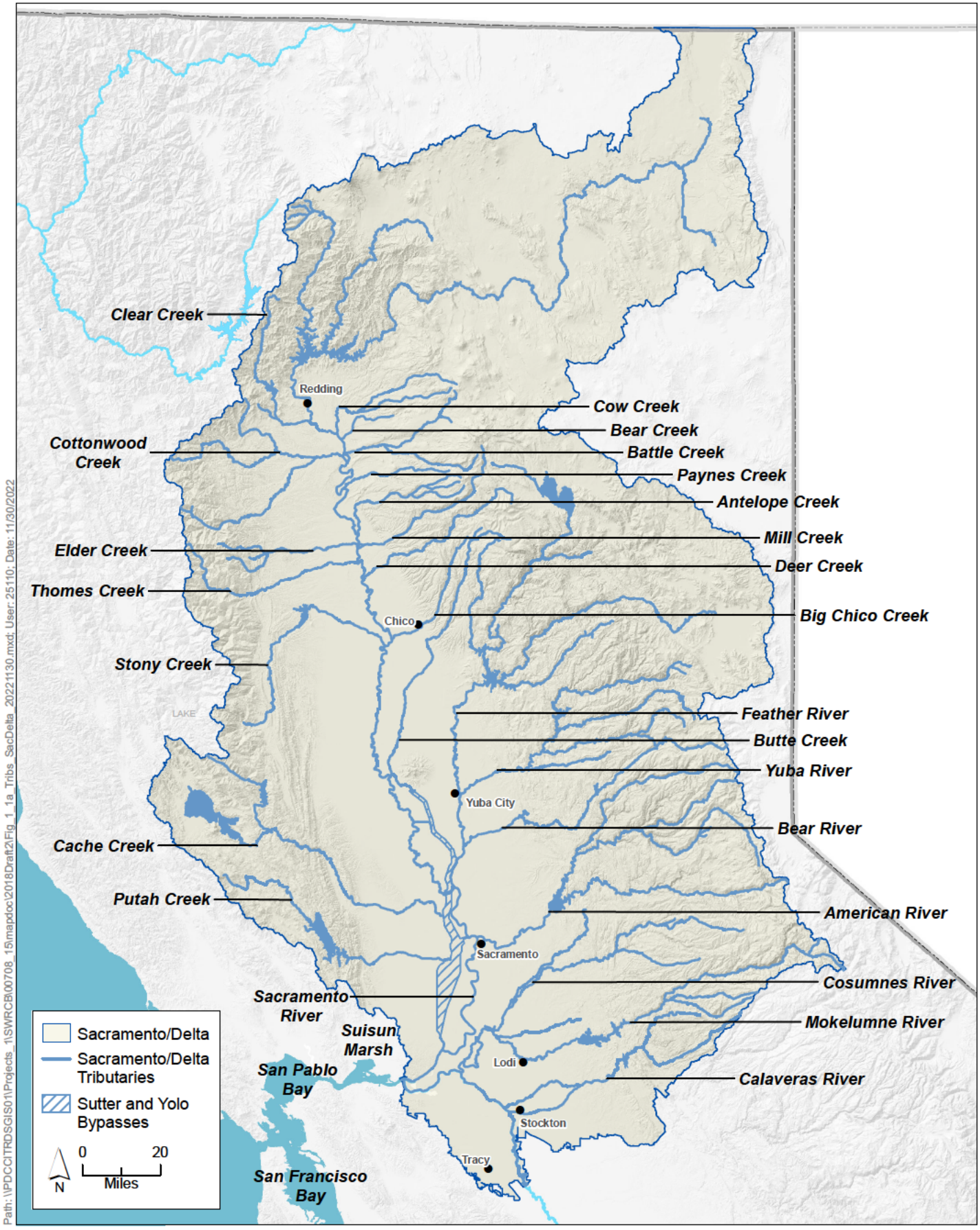


Figure 1-1a
Sacramento/Delta Tributaries



Figure 1-1b
Plan Area

impacts may occur. The study area is divided into seven regions based on geography and water supply (Figure 1-1c). The geographic regions in the study area include the Sacramento River watershed, Delta eastside tributaries, Delta, San Francisco Bay Area, San Joaquin Valley, Central Coast, and Southern California.[6] The environmental analysis presented in Chapter 7, *Environmental Analysis*, Chapter 9, *Proposed Voluntary Agreements*, and Chapter 13*, Revised Proposed Plan Amendments*, describes and analyzes potential environmental impacts in these geographic regions as applicable.

1.5.2 Organization of the Analyses

To organize the environmental analysis, the evaluation of reasonably foreseeable methods of compliance and response actions that may be taken in response to the project are organized into four main categories: (1) changes in hydrology; (2) changes in water supply; (3) habitat restoration and other ecosystems projects; and (4) new or modified facilities. The revised proposed Plan amendments, proposed Plan amendments, and other project alternatives are analyzed broadly due to the size and complexity of Sacramento/Delta water supply and use. The environmental analyses use the thresholds of significance that the State Water Board adopted in 2011 as Appendix A to the CEQA regulations. (Cal. Code. Regs., tit. 23, §§ 3720 et seq.)

The analyses in the resource sections of Chapter 7 (Sections 7.3 through 7.20), Chapter 9 (Sections 9.7.3 through 9.7.20), and Chapter 13 (Sections 13.7.3 through 13.7.20) largely focus on environmental impacts that may result from changes in hydrology and changes in water supply. Changes in hydrology include changes in streamflows and reservoir storage levels. Changes in water supply include reduced Sacramento/Delta supplies for agriculture, municipal, and wildlife refuge uses and changes in groundwater levels and use, including increased pumping from existing and new wells. Changes in water supply also include other water management actions: groundwater storage and recovery, water transfers, water recycling, and agricultural and municipal water conservation using existing infrastructure and not involving construction.

The environmental impacts of physical habitat restoration and other ecosystem projects and new or modified facilities are evaluated in Sections 7.21, *Habitat Restoration and Other Ecosystem Projects*, and 7.22, *New or Modified Facilities*, respectively. Section 7.21 evaluates the environmental impacts of non-flow ecosystem projects, including physical habitat restoration, fish passage projects, predation, and aquatic invasive species control. Section 7.22 evaluates the environmental impacts of actions entities may take that would involve construction to modify or build new facilities and infrastructure to supplement or conserve surface water supplies and other construction projects that may result from implementation of possible Sacramento/Delta Plan amendments. Projects evaluated in Section 7.22 include new or modified dams/reservoirs and points of diversion; groundwater wells and groundwater storage and recovery projects; and new or modified drinking water treatment plants, including desalination plants and wastewater treatment plants. Section 7.22 also evaluates other construction actions that entities may take in response to changes in hydrology and water supply, including new or modified boat ramps, streamflow or temperature monitoring devices, and water conservation projects such as canal lining.

[6] The Trinity River watershed was previously not included in the defined study area in the 2023 draft Staff Report because it does not receive Sacramento/Delta supply, and therefore reductions in Sacramento/Delta supply would not affect the area. However, flows from the Trinity River to the Bay-Delta watershed are already incorporated into the existing analyses and as such, it is appropriate to explicitly acknowledge the inclusion of the Trinity River as part of the study area as was done with Chapter 13 of the 2025 partially recirculated draft Staff Report.

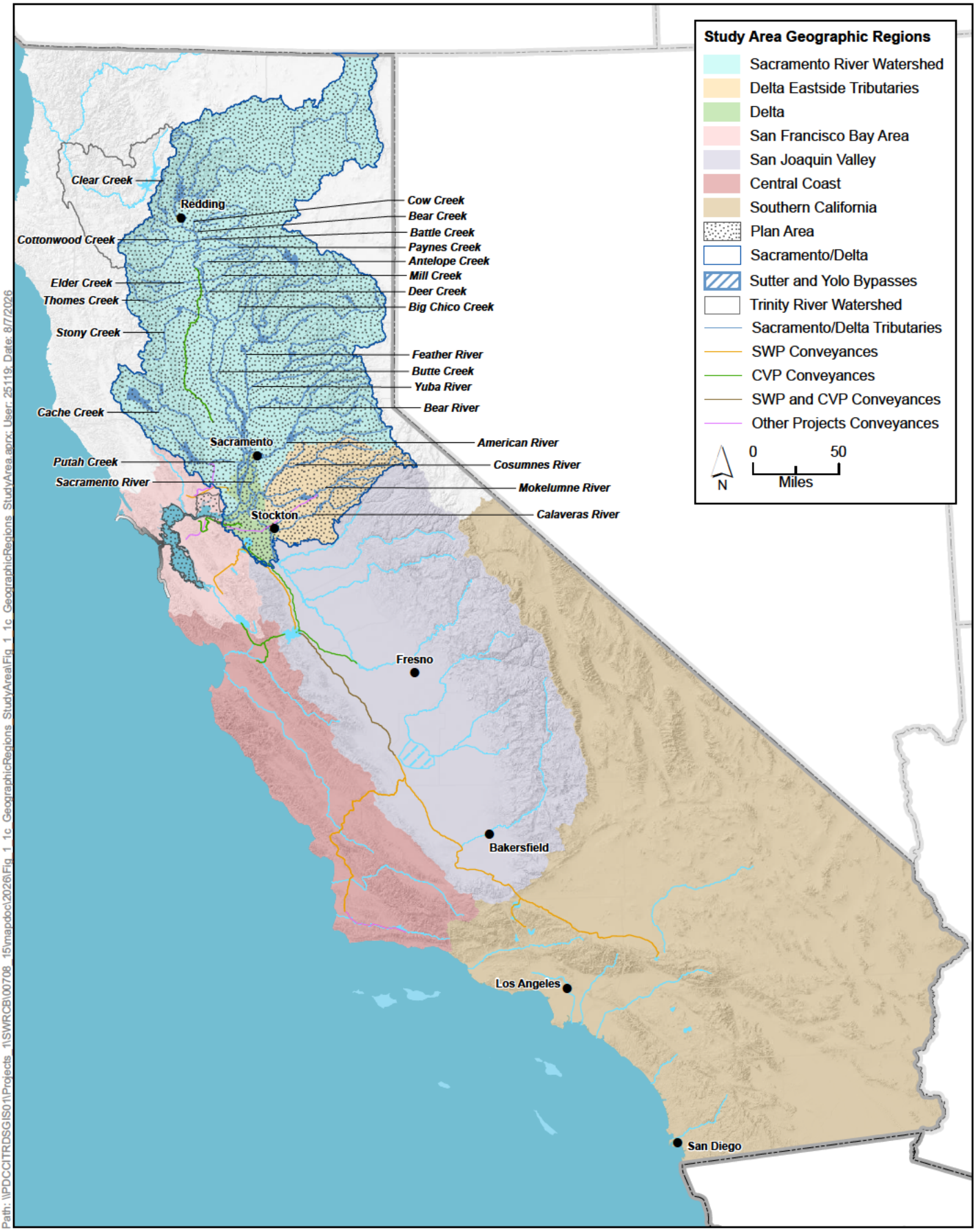


Figure 1-1c
Study Area Geographic Regions

Many of the actions evaluated in Sections 7.21 and 7.22 would involve construction and, in some cases, large construction projects that would require site-specific environmental impact analyses. Because the potential combination of future actions such as restoration actions or development of new or modified water facilities is unknown, these actions are discussed generally and qualitative comparisons to baseline conditions are made.

The following resource topics are addressed in Chapter 7, *Environmental Analysis,* Section 9.7*, Environmental Analysis*, and Section 13.7, *Environmental Analysis*, for the proposed Plan amendments, proposed VAs, and revised proposed Plan amendments respectively: aesthetics; agriculture and forest resources; air quality; biological resources, including terrestrial biological resources and aquatic biological resources; cultural resources; energy; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality, including surface water and groundwater; land use and planning; mineral resources; noise; population and housing; public services; recreation; transportation/traffic; utilities and service systems. Chapter 7, Chapter 9, and Chapter 13 also include an evaluation of cumulative impacts, growth-inducing impacts, and significant irreversible environmental changes.

1.5.3 Baseline, Evaluation Approach, and Modeling Tools

CEQA requires a description of the physical environmental conditions in the vicinity of the project as they exist at the time the Notice of Preparation (NOP) is published (January 24, 2012 [^SWRCB 2012]), or if no NOP is published, at the time environmental analysis is commenced. (Cal. Code Regs., tit. 14, § 15125). This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. Where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence.

The baseline is the primary point of comparison for evaluating the environmental impacts of the alternatives evaluated in the Staff Report. Section 6.2.1, *Baseline Assumptions*, provides a detailed description of the approach used to simulate baseline conditions in SacWAM. As described in Section 6.2.1, the process for the Sacramento/Delta updates to the Bay-Delta Plan has been ongoing since 2012. Since the planning process for the Sacramento/Delta updates started, there have been changes to regulations that affect reservoir operations, streamflow requirements, and Delta operations. Updates to the LTO of the CVP and SWP and associated BiOps and ITPs have changed the requirements for the operation of the SWP and CVP. As of the release of the 2023 draft Staff Report, actual changes to operations of the CVP and SWP had not significantly changed under most circumstances. Generally, the project baseline includes regulatory requirements as they were implemented in recent years prior to the release of the 2023 draft Staff Report (and continuing until the end of 2024 when significant changes to LTO operations were implemented) to represent existing conditions during the development of the revised proposed Plan amendments; these regulatory assumptions are listed in Table 6.2-1 in Chapter 6, *Changes in Hydrology and Water Supply*.

The environmental analyses use both quantitative and qualitative approaches to compare the potential impacts to baseline conditions. For the quantitative evaluation, SacWAM was used to simulate changes in hydrology and water supply that could result from the revised proposed Plan amendments, proposed Plan amendments, proposed VAs, and other flow alternatives (including a

Low Flow Alternative and a High Flow Alternative) discussed further below. The SacWAM documentation describes the methods and assumptions used to develop SacWAM (^SacWAM 2023), with updates to SacWAM following release of the 2023 draft Staff Report described in Appendix H1a, *Sacramento Water Allocation Model Methods*, and updates to SacWAM following release of the 2025 partially recirculated draft Staff Report described in Appendix H1a6.2, *SacWAM Updates*. Chapter 6, *Changes in Hydrology and Water Supply*, summarizes the model results for the proposed Plan amendments. Appendix A1, *Sacramento Water Allocation Model Methods and Results,* presents additional information and provides detailed tables and figures of model results that are summarized in Chapter 6. Model results for the proposed VAs are summarized in Chapter 9, *Proposed Voluntary Agreements*, and detailed methods and results are presented in Appendix G3a, *Sacramento Water Allocation Model Methods and Results for the Proposed Voluntary Agreements.* Model results for the revised proposed Plan amendments are summarized in Section 13.4, *Changes in Hydrology and Water Supply*, and detailed methods and results are presented in Appendix H1, *Sacramento Water Allocation Model Methods and Results for the Revised Proposed Plan Amendments*.

In addition to SacWAM, other modeling and technical analyses were utilized to evaluate environmental impacts and economic effects. Discussion of modeling and technical analyses used to evaluate the environmental impacts is presented in subsequent chapters and sections. Detailed model results are presented in Appendix A, *Modeling for the Unimpaired Flow Scenarios*, Appendix G3*, Modeling Results for the Proposed Voluntary Agreements*, and Appendix H1, *Sacramento Water Allocation Model Methods and Results for the Revised Proposed Plan Amendments*.

The Staff Report also contains various qualitative analyses to evaluate the potential environmental impacts of the alternatives. The evaluation approach and modeling tools used for the environmental analyses of the proposed Plan amendments are described in more detail in Section 7.1, *Introduction, Project Description, and Approach to Environmental Analysis*. The evaluation approach used for the proposed VAs is described in Section 9.7, *Environmental Analysis*. The evaluation approach used for the revised proposed Plan amendments is described in Section 13.7, *Environmental Analysis*.

In addition to the project baseline, other points of comparison are used in the Staff Report for describing and analyzing the effects of the HRL proposal. In particular, as described in the revised proposed Plan amendments and Appendix B.1 of the Plan, the HRL flow commitments are intended to be additive to flows required by D-1641 and flows resulting from implementation of the 2024 LTO ROD and 2024 BiOps where applicable,[7] other regulatory requirements, and other non-regulatory flows that would be present absent HRL flow commitments as analyzed in the Scientific Basis Report Supplement supporting the VA pathway and the Staff Report. This condition is referred to as the "base" in the main body of the Plan and the "reference conditions" in Appendix B.1. The HRL MOU originally identified that flows would be additive to flows required by D-1641 and flows resulting from implementation of the 2019 BiOps. Since that time the HRL participants have requested that the 2019 BiOps be modified to reflect the 2024 LTO updates, which are largely consistent with the 2019 LTO and BiOps (DWR has prepared a memo [DWR 2025] summarizing the differences [see Appendix H1a, Section H1a.3.2, *Sensitivity to LTO of the CVP and SWP*]). Following the HRL participants' request to change the VA pathway base flow conditions from the 2019 BiOps to reflect the 2024 LTO updates to the ROD and BiOps, Reclamation adopted a new LTO ROD in December 2025 that relied on the 2024 BiOps but made further changes that would affect the base/reference conditions.

[7] Because the HRL proposal includes tributaries and water right holders that are not associated with the CVP and SWP, the statement "where applicable" is included.

The HRL flows were assumed to be additive to the flows analyzed in the 2026 Staff Report and 2023 Final Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements. To make clear that the base for the VA pathway flows does not include the 2025 ROD changes, the revised proposed Plan amendments, including Appendix B.1, specify that the base/reference conditions for the VA pathway flows are flows resulting from implementation of the 2024 ROD and BiOps (2024 ROD/BiOps) where applicable. Any references to the 2024 BiOps as part of the base/reference conditions in this Staff Report and response to comments is intended to reflect the 2024 ROD. Also, some documents that were produced before the change from the 2019 BiOps to the 2024 ROD/BiOps were not updated to refer to the 2024 ROD/BiOps. Chapter 13, *Revised Proposed Plan Amendments*, includes the updated language for the revised proposed Plan amendments for this and other issues.

The final draft Bay-Delta Plan was also updated to clarify that the base/reference conditions is not intended to include increased diversions from new water supply projects, including water right applications and change petitions approved after 2025, that are not part of the VA pathway but instead subject to the inflow and inflow-based Delta outflow requirements in Sections 4.4.2.2 and 4.4.2.6 of the Plan.

The 2024 ROD/BiOps condition is different than the Staff Report baseline in that the 2024 ROD/BiOps condition is the theoretical assumed starting point for accounting purposes upon which HRL flow contributions would be added, rather than a reflection of current or prior existing conditions or baseline. The baseline is the primary point of comparison for evaluating the environmental impacts of the alternatives evaluated in the Staff Report. The major difference between the baseline and 2024 ROD/BiOps condition relative to exports and Delta outflows is the applicability of I:E constraints that apply during April and May. The I:E export limits have the effect of restricting exports and increasing Delta outflow during April and May. In the 2024 ROD/BiOps condition, exports are higher on average in January through June than the project baseline, and Delta outflow is lower on average in these months, because the 2024 ROD/BiOps does not include the I:E requirements from the 2020 CDFW ITP or 2009 BiOps applied to either the CVP or the SWP (see Section 13.4.2.3, *Regulatory Pathway*, for discussion on export constraints based on the San Joaquin River flows requirement for the CVP). Therefore, the VA pathway assumes that the I:E requirements do not apply to the CVP or SWP. Instead, the VA pathway includes export reductions that are considered HRL flow commitments that would account for a portion of the effects of I:E constraints on interior Delta flows and Delta outflow.

1.5.4 Alternatives Considered

CEQA requires an environmental document to describe a range of reasonable alternatives to a project that "would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives." (Cal. Code Regs., tit.14, § 15126.6, subd. (a); Cal. Code Regs., tit. 23, § 3777, subd. (b)(3).) It need not consider every conceivable alternative to a project, but instead, it "must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation." (Cal. Code Regs., tit.14, § 15126.6, subd. (a).) A lead agency is not required to consider alternatives that are infeasible. (*Ibid.*)

This Staff Report evaluates the environmental impacts and economic effects of the revised proposed Plan amendments that reflect the proposed project as articulated in Chapter 13, *Revised Proposed Plan Amendments,* and the original proposed Plan amendments articulated in Chapter 5, *Proposed*

Plan Amendments, that reflect the proposed project at the time of the release of the 2023 draft Staff Report. This Staff Report also evaluates other alternatives, including the following: a No Project Alternative (Alternative 1), a Low Flow Alternative (lower flows than the proposed Plan amendments) (Alternative 2), a High Flow Alternative (higher flows than the proposed Plan amendments) (Alternative 3), and the Proposed Voluntary Agreements Alternative (Alternative 6) that reflects the HRL proposal at the time of the release of the 2023 draft Staff Report. The No Project Alternative is included to provide a comparison of the impacts of approving the project with the impacts of not approving the project. The Low Flow and High Flow Alternatives (referred to as *other flow alternatives*) would require lower or higher amounts of inflow to the Delta but otherwise would be consistent with the proposed Plan amendments. The environmental analysis of the No Project Alternative (Alternative 1), Low Flow Alternative (Alternative 2), and High Flow Alternative (Alternative 3) is provided in Section 7.24, *Alternatives Analysis*, and the environmental analysis of the Proposed Voluntary Agreements Alternative (Alternative 6) is provided in Chapter 9, *Proposed Voluntary Agreements*.

The Staff Report also evaluates modular alternatives, including modular alternatives for interior Delta flows and fall Delta outflow (Alternatives 4a, 4b, and 4c), modular drought alternatives (Alternatives 5a and 5b), and a modular alternative for the Protection of Voluntary Agreements Flows (Alternative 6a). Alternative 4a (Exclusion of Interior Delta Flow and Fall Delta Outflow Related Amendments) would exclude from the proposed Plan amendments and the Low Flow and High Flow Alternatives interior Delta flow and fall Delta outflow provisions originating from NMFS and USFWS BiOp provisions for operation of the SWP and CVP and CDFW ITP for operation of SWP. Alternative 4b (Head of Old River Barrier Alternative) would require installation of a Head of Old River Barrier or alternative mechanisms to prevent San Joaquin River-origin anadromous fish from being drawn into the Delta export facilities. Alternative 4c (Extended Export Constraint Alternative) would require additional export constraints as a function of San Joaquin River flows (commonly referred to as the *San Joaquin River inflow to export ratio or I:E*). The modular drought alternative includes two variations to help address limited water supplies during drought. Alternative 5a (Instream Flow Protection Provision Alternative) would require water diverters (in addition to DWR and Reclamation) to bypass water needed to meet existing water quality objectives during drought circumstances similar to existing standard water right Term 91; Alternative 5b (Shared Water Shortage Provision Alternative) would require all water users to reduce their use during drought conditions. Modular Alternative 6a (Protection of Voluntary Agreement Flows Alternative) would identify as part of the program of implementation additional measures to protect the base upon which the proposed VA flows are intended to be added from new or expanded water diversions. The environmental analysis of the modular alternatives for interior Delta flows and fall Delta outflow (Alternatives 4a, 4b, and 4c) and modular drought alternatives (Alternatives 5a and 5b) is provided in Section 7.24, *Alternatives Analysis*. The environmental analysis of the Protection of Voluntary Agreement Flows Alternative (Alternative 6a) is provided in Chapter 9, *Proposed Voluntary Agreements*.

The revised proposed Plan amendments utilize and combine previously evaluated alternatives and bring together in the Bay-Delta Plan program of implementation a VA pathway and a regulatory pathway. The analysis in Chapter 13, *Revised Proposed Plan Amendments*, builds upon the analysis of the proposed Plan amendments, the proposed VAs, and the alternatives presented in the 2023 draft Staff Report. The regulatory pathway is built from a combination of the proposed Plan amendments, the Low Flow Alternative (Alternative 2), and the Exclusion of Interior Delta Flow and Fall Delta Outflow Related Amendments Alternative (Alternative 4a), and the VA pathway is built from a

combination of the VA Alternative (Alternative 6) and a variation of the Protection of Voluntary Agreement Flows Alternative (Alternative 6a). Thus, the revised proposed Plan amendments are presented as the proposed project that is comprised of elements from the range of reasonable alternatives already evaluated.

1.5.5 Environmental Analysis Results

For a summary of environmental impacts and mitigation measures identified for the revised proposed Plan amendments, see Tables 1-1 through 1-3 at the end of this chapter. The impacts of changes in hydrology and changes in water supply that could result from implementation of the revised proposed Plan amendments are presented in Chapter 13, *Revised Proposed Plan Amendments*, Sections 13.7.3 through 13.7.20. Sections 13.7.3 through 13.7.20 are organized by environmental resource category, following the State Water Board's environmental checklist (Cal. Code Regs, tit. 23, div. 3, ch. 27, §§ 3720–3781, Appendix A). The CEQA environmental checklist questions are listed in the same order as they are addressed in Sections 13.7.3 through 13.7.20. Some impact questions are sufficiently related and are addressed together. Table 1-1 summarizes impacts and mitigation measures identified for changes in hydrology and water supply.

Impact and mitigation measure summary tables have also been prepared for reasonably foreseeable methods of compliance and response actions that involve physical habitat restoration and other complementary ecosystem projects and new and modified facilities. Table 1-2 summarizes impacts and mitigation measures identified for habitat restoration and other ecosystem projects that are evaluated in Section 7.21, *Habitat Restoration and Other Ecosystem Projects*. Table 1-3 summarizes impacts and mitigation measures identified for new or modified facilities that are evaluated in Section 7.22, *New or Modified Facilities*.

Impact and mitigation measure summary tables have also been prepared for other project alternatives. For a summary of significant impacts and mitigation measures identified for the proposed Plan amendments, see Table 7.1-2 in Section 7.1, *Introduction, Project Description, and Approach to Environmental Analysis*. For a summary of significant impacts and mitigation measures identified for the proposed VAs, see Table 9.7-13 in Chapter 9, *Proposed Voluntary Agreements*. For a summary of significant impacts and mitigation measures identified for the No Project Alternative (Alternative 1), Low Flow Alternative (Alternative 2), and High Flow Alternative (Alternative 3), see Appendix F, *Impact Summary Tables for Alternatives 1, 2, and 3*. For a comparison of the environmental impacts of the revised proposed Plan amendments to the proposed Plan amendments and stand-alone alternatives, see Appendix H4, *Impact Summary Table for Alternatives,* and Section 13.7.1.4, *Alternatives Analysis*.

Table 1-1 identifies potential impacts and beneficial environmental effects from changes in hydrology and supply under the revised proposed Plan amendments. Some potentially significant impacts can be mitigated to less-than-significant levels. Because the State Water Board has authority to ensure that mitigation is implemented for certain actions, these impacts could be reduced to less-than-significant levels with mitigation incorporated. These impacts are listed as potentially significant followed by an asterisk.

Many other identified potentially significant environmental impacts could be reduced to less-than-significant levels with mitigation incorporated; however, due to the large scope of the project and wide range of possible response actions, sufficient information is not available to conclude with certainty that the mitigation measures will reduce all impacts to less-than-significant levels in all

circumstances. Some mitigation activities are within the State Water Board's jurisdiction. However, other mitigation measures are largely within the jurisdiction and control of other agencies or depend on how water users respond to the project. Accordingly, the State Water Board cannot guarantee that measures will always be adopted or applied fully to mitigate potentially significant impacts. Therefore, unless and until the mitigation is fully implemented, the impacts remain potentially significant.

In addition, the environmental analysis often considers a range of potential outcomes, including the most conservative, for evaluating potentially significant effects on the physical environment. In many cases, there may be no impact. For each resource area, the analysis assumes a worst-case scenario. Some impacts are inversely proportional and it is not possible for a worst-case scenario to occur for every environmental resource area.

For some impact mechanisms, implementation of the VA pathway may have a different impact significance compared to the regulatory pathway for the term of the VA pathway. Beneficial effects and potentially significant impact conclusions and proposed mitigation measures that apply only to the regulatory pathway and not the VA pathway are identified by superscript "1" in Table 1-1. Potential impact conclusions and proposed mitigation measures that apply only to the VA pathway and not the regulatory pathway are identified by superscript "2" in Table 1-1.

It is important that the CEQA impact conclusions be understood in the context of the nature of the proposed project, which is intended to be a restoration action. The Porter-Cologne Act is California's comprehensive water quality control statute, which implements portions of the federal Clean Water Act. The primary purpose of the federal Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (Clean Water Act § 101(a).) Water quality objectives are established to ensure the reasonable protection of beneficial uses and the prevention of nuisance, in consideration of various factors, including past, present, and probable future beneficial uses of water (Wat. Code, § 13241.) The Bay-Delta Plan identifies various beneficial uses of water in the Bay-Delta watershed and establishes water quality objectives designed to reasonably protect those uses. The impacts that could potentially result from implementation occur in a system that has been highly altered, and the project would be expected to improve conditions for native fish and wildlife in the Sacramento/Delta watershed over time. However, changes in hydrology and changes in water supply could result in some environmental impacts at certain times and locations that must be analyzed under CEQA. These potential environmental impacts should be viewed in light of the overall purpose and goals of the Sacramento/Delta update to the Bay-Delta Plan.

Table 1-1. Impact and Mitigation Measure Summary—Changes to Hydrology and Supply †

Impact	Impact Conclusions	Proposed Mitigation
AESTHETICS		
Impact AES-a: Have a substantial adverse effect on a scenic vista **Impact AES-b:** Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway **Impact AES-c:** Substantially degrade the existing visual character or quality of the site and its surroundings	**Potentially Significant**	
	Reservoir level changes may result in exposure of more unvegetated ground or "bathtub rings" Agriculture land conversion could affect aesthetic resources if properties are developed or neglected	**MM-AES-a–c: Mitigate impacts of the project that could have a substantial adverse effect on a scenic vista or could substantially damage a scenic resource or degrade the existing visual character or quality of the site and its surroundings** 1. Reservoir Management (MM-AQUA-a,d: 1) 2. Measures to Mitigate Conversion of Agricultural Land (MM-AG-a,e)
	Less than Significant	
	Altered streamflows could affect water levels and appearance Reduced Sacramento/Delta supply to municipalities could affect the visual quality of the urban environment Reduced Sacramento/Delta supplies to wildlife refuges could result in slight changes to the visual character of these areas[1] Municipal water conservation measures could cause a change in the visual character of localized settings	—
Impact AES-d: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	**No Impact**	
	—	—
AGRICULTURE AND FOREST RESOURCES		
Impact AG-a: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and	**Potentially Significant**	
	Reduced Sacramento/Delta supply to agriculture could lead to changes in distribution of crop types and acreage and conversion of farmland to nonagricultural use	**MM-AG-a,e: Mitigate impacts related to the conversion of Prime and Unique Farmland and Farmland of Statewide Importance (important farmland) to**

Impact	Impact Conclusions	Proposed Mitigation
Monitoring Program of the California Resources Agency, to nonagricultural use **Impact AG-e:** Involve other changes in the existing environment that, due to their location or nature, could result in conversion of important farmland to nonagricultural use	Increased use of water transfers could further incentivize farmland conversion, particularly in rapidly urbanizing areas Lower groundwater levels could reduce groundwater available for agricultural use Reduced streamflow and water levels at some locations could affect the ability of existing diversion intakes to divert water for agricultural use[1] Increased inundation in the Sutter and Yolo Bypasses during the planting season could affect crop acreage[1]	**nonagricultural use** 1. Diversify Water Portfolios 2. Increase Efficiency of Agricultural Water Use 3. Impose Conditions on Land Use Changes or Other Discretionary Approvals 4. Reduce Impacts on Groundwater (MM-GW-b) 5. Oversight and Approval of Water Transfers 6. Ensure Effectiveness of Diversion Intakes[1] 7. Minimize Disruptions to Agriculture in the Sutter and Yolo Bypasses from Increased Floodplain Inundation[1]
Impact AG-b: Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract	**No Impact**	
	—	—
Impact AG-c: Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))	**No Impact**	
	—	—
Impact AG-d: Result in the loss of forest land or conversion of forest land to non-forest use	**No Impact**	
	—	—
AIR QUALITY		
Impact AQ-a: Conflict with or obstruct implementation of the applicable air quality plan **Impact AQ-b:** Violate any air quality standard or contribute substantially to an existing or projected air quality violation	**Potentially Significant**	
	Increased groundwater pumping using diesel pumps and generators could result in emissions	**MM-AQ-a–c: Mitigate impacts from criteria air pollutant emissions from groundwater pumping**

Impact	Impact Conclusions	Proposed Mitigation
Impact AQ-c: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)	**Less than Significant**	
	Lower streamflows and reservoir levels could result in exposure to increased windblown dust emissions Agricultural land fallowing could result in exposure to increased fugitive dust Post-harvest rice burning could result in exposure to air pollutant emissions	—
	Beneficial	
	Water conservation could result in a reduction in emissions	—
Impact AQ-d: Expose sensitive receptors to substantial pollutant concentrations	**Less than Significant**	
	Lower reservoir levels could result in exposure to increased windblown dust emissions Agricultural land fallowing could result in exposure to increased fugitive dust on lands where soil is exposed Post-harvest rice burning, groundwater pumping, and the use of other water management actions could result in exposure to pollutant emissions	—
Impact AQ-e: Create objectionable odors affecting a substantial number of people	**Less than Significant**	
	Formation of harmful algal blooms from reduced flows and reservoir levels could produce odor compounds Reductions in overall wastewater flow and increased use of recycled water could result in increases in odors Increases in odors from increased groundwater pumping and other water management actions	—
BIOLOGICAL RESOURCES—TERRESTRIAL		
Impact TER-a: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or	**Potentially Significant**	
	Increased inundation in flood bypasses during the planting season could affect crop acreage,	**MM-TER-a: Mitigate impacts on special-status species**

Impact	Impact Conclusions	Proposed Mitigation
special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service	which could affect special-status wildlife species that use croplands as habitat[1] Reduced Sacramento/Delta supply to agricultural lands could affect habitat for special-status species, including giant gartersnake, Swainson's hawk, greater sandhill crane, tricolored blackbird, and California black rail Reduced Sacramento/Delta supply to wildlife refuges could affect habitat for special-status species, including giant gartersnake, Swainson's hawk, greater sandhill crane, tricolored blackbird, and California black rail[1] Reduced Sacramento/Delta supply to municipal use could affect special-status plant and wildlife species[1] Capturing flood flows for groundwater storage and recovery could diminish instream ecological benefits of high-flow events* Water transfers based on cropland idling could affect special-status species that use agricultural fields Increased use of recycled water that would otherwise discharge to streams could diminish ecological benefits of instream flows, especially in dry seasons and in low-flow conditions where streamflow is dependent on wastewater discharges*	1. Minimize Impacts on Sutter and Yolo Bypass Agricultural Lands (MM-AG-a,e: 3, MM-AG-a,e: 7)[1] 2. Habitat Protection and Restoration Actions 3. Special-Status Species Management Measures 4. Diversify Water Portfolios 5. Regulation of Waste Discharges to Streams (MM-SW-a,f: 1)[1] 6. Support and Approval of Water Recycling 7. Support and Approval of Groundwater Storage and Recovery 8. Oversight and Approval of Water Transfers
	Less than Significant	
	Increased winter flows on the Sacramento and Feather Rivers could affect bank swallow habitat Changes in reservoir water levels could affect habitat for bald eagle, American white pelican, western pond turtle, and amphibians Changes in streamflow below export reservoirs	—

Impact	Impact Conclusions	Proposed Mitigation
	could affect habitat for special-status terrestrial species[1] Lower groundwater levels could affect natural communities that are dependent on groundwater and sensitive species that are reliant on groundwater-dependent ecosystems	
	Beneficial	
	Restoration and maintenance of natural flow would improve conditions for special-status plants and wildlife Increased frequency and duration of floodplain inundation would improve habitat for wintering waterfowl and other wildlife species Changes in Delta inflows and Delta outflows would improve habitat conditions for freshwater and tidal marsh species in the Delta and Suisun Marsh	—
Impact TER-b: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact TER-c:** Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means	**Potentially Significant**	
	Changes in Sacramento/Delta reservoir levels could affect associated riparian and wetland habitat Reduced Sacramento/Delta supply to wildlife refuges could decrease wetland areas over time[1] Reduced Sacramento/Delta supply could affect water quality in managed wetlands[1] Reduced Sacramento/Delta supply to municipal and agricultural use could affect sensitive riparian and wetland habitat, and other natural communities[1] Lower groundwater levels could affect riparian and wetland habitat, and sensitive groundwater-dependent natural communities and wetlands Capturing flood flows for groundwater storage and recovery could diminish the instream	**MM-TER-b,c: Mitigate impacts on riparian habitats or other sensitive natural communities, including wetlands** 1. Reservoir Management (MM-AQUA-a,d: 1) 2. Reduce Impacts on Groundwater-Dependent Ecosystems (MM-GW-b) 3. Agricultural Drainage Control (MM-SW-a,f: 7)[1] 4. Implement Mitigation Measure MM-TER-a elements to reduce impacts on riparian habitats and other sensitive natural communities, including wetlands: • Habitat Protection and Restoration Actions (MM-TER-a: 2) • Regulation of Waste Discharges to

Impact	Impact Conclusions	Proposed Mitigation
	ecological benefits of high-flow events* Increased use of water transfers could affect groundwater-dependent natural communities and some perennial wetlands in some areas, and could exacerbate effects from lower groundwater levels on riparian and wetland habitat and sensitive natural communities Increased use of water recycling could diminish riparian and wetland habitat, especially in dry seasons and in low-flow conditions where streamflow depends on wastewater discharges*	Streams (MM-TER-a: 5) • Support and Approval of Water Recycling (MM-TER-a: 6) • Support and Approval of Groundwater Storage and Recovery (MM-TER-a: 7) • Oversight and Approval of Water Transfers (MM-TER-a: 8)
	Less than Significant	
	Reduced streamflows below export reservoirs could affect riparian and wetland habitat	—
	Beneficial	
	A more natural flow regime and providing higher flows would restore and maintain natural processes, such as sediment deposition, marsh accretion, nutrient transport, seed dispersal, and flow-related disturbance, which would benefit riverine and associated wetland and riparian habitat Increased frequency and duration of floodplain inundation would benefit riparian and wetland habitat and associated natural communities Changes in Delta inflows and Delta outflows would benefit freshwater marshes and tidal marshes Increased use of water recycling and municipal water conservation measures could reduce municipal discharges and support conditions favorable to wetlands and sensitive natural communities adapted to the natural flow regime	—

Impact	Impact Conclusions	Proposed Mitigation
Impact TER-d: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites	**Potentially Significant**	
	Reduced Sacramento/Delta supply for wildlife refuges and agriculture could decrease the amount of habitat available for resident and migratory waterfowl and shorebirds[1] Increased use of water transfers could result in conversion of crop types that provide foraging habitat for migratory waterfowl and shorebirds	**MM-TER-d: Mitigate impacts on wildlife movement or wildlife nurseries** 1. Implement Mitigation Measure MM-TER-a and Mitigation Measure MM-TER-b,c elements to mitigate impacts on the movement of native resident or migratory fish or wildlife species, migratory wildlife corridors, and native wildlife nursery sites. • Habitat Protection and Restoration Actions (MM-TER-a: 2)[1] • Oversight and Approval of Water Transfers (MM-TER-a: 8) • Reduce Impacts on Groundwater-Dependent Ecosystems (MM-TER-b,c: 2)
	Less than Significant	
	Changes in reservoir levels could affect the amount of breeding habitat for resident or migratory waterfowl populations	—
	Beneficial	
	A more natural flow regime and providing higher flows would benefit native resident and migratory wildlife that use riverine and associated wetland and riparian habitat and natural communities as migratory corridors or nursery sites	—
Impact TER-e: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance	**No Impact**	
	—	—

Impact	Impact Conclusions	Proposed Mitigation
Impact TER-f: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	**Less than Significant**	
	Reduced Sacramento/Delta supply could affect habitat goals of some habitat conservation plans[1]	—
	Beneficial	
	Changes in Sacramento/Delta tributary flows, Delta inflows, and Delta outflows would complement actions identified in some habitat conservation plans	—
BIOLOGICAL RESOURCES—AQUATIC		
Impact AQUA-a: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact AQUA-d:** Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites	**Potentially Significant**	
	Changes in reservoir levels could affect downstream flows and water temperatures below some reservoirs Changes in interior Delta flows could affect native anadromous and estuarine fish species residing in or migrating through the Delta Reduced Sacramento/Delta supply to agriculture could affect habitat for special status species that depend in part on Sacramento/Delta water supply for habitat (i.e., irrigation runoff in agricultural drain for desert pupfish)[1] Changes in water supply could affect WWTP effluent discharge which could result in effects on water quality and flow that could affect special-status aquatic species occurring in these locations[1] Lower groundwater levels could affect stream-aquifer interactions and streamflows in some locations Diversion of surface water for groundwater storage and recovery could reduce peak flows that provide ecological and habitat functions (e.g., floodplain inundation)*	**MM-AQUA-a,d: Mitigate impacts on aquatic special-status species and wildlife movement or wildlife nurseries** 1. Implement Existing Laws that Protect and Mitigate Impacts from Dams and Diversions 2. Habitat Protection and Restoration Actions 3. Special-Status Species Management Measures 4. Regulation of Waste Discharges to Streams (MM-SW-a,f: 1)[1] 5. Support and Approval of Recycled Water 6. Reduce Impacts on Groundwater (MM-GW-b) 7. Diversify Water Portfolios 8. Support and Approval of Groundwater Storage and Recovery 9. Oversight and Approval of Water Transfers 10. Implement Existing Laws to Protect and Mitigate Fisheries Impacts from Changes in Interior Delta Flows

Impact	Impact Conclusions	Proposed Mitigation
	Water transfers could alter hydrologic patterns and affect aquatic biological resources in some locations Increased water recycling could decrease the volume of treated wastewater effluent discharge into water bodies that are migratory corridors for fish*	
	Less than Significant	
	Reductions in Delta inflow and outflow during July-December could affect native anadromous, estuarine, and resident fish species Changes in wet season flows (geomorphic flows) on regulated tributaries in the Sacramento/Delta regions could cause some erosion, but would also result in ecological benefits of floodplain inundation Changes in reservoir levels could affect native reservoir fish species, such as minnows and suckers[1]	—
	Beneficial	
	A more natural flow regime would support a connected and functioning ecosystem and benefit native fish in the Sacramento/Delta Changes in Delta inflows and outflows during January–June would benefit native anadromous, estuarine, and resident fish species Increased frequency and duration of floodplain inundation, including in the Bear River, Feather River, Mokelumne River, Yuba River, and Yolo Bypass would benefit aquatic species	—
Impact AQUA-f: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	**Less than Significant**	
	Reduced Sacramento/Delta supply could frustrate certain conservation plan management actions[1]	—

Impact	Impact Conclusions	Proposed Mitigation
CULTURAL RESOURCES		
Impact CUL-a: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 **Impact CUL-b:** Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5	**Potentially Significant**	
	Changes in reservoir levels could expose previously inundated cultural resources and/or significant historic or archaeological resources to increased wave action, erosion, and human activity	**MM-CUL-a,b: Mitigate impacts of project that could cause a substantial adverse change in the significance of a historical or archaeological resource** 1. Reservoir Management (MM-AQUA-a,d: 1) 2. Implement or Adhere to Cultural Resource Management Measures for Lands Surrounding Reservoirs 3. Unanticipated Discoveries
	Less than Significant	
	Changes in streamflows could result in inundation and exposure of historic or archaeological resources	—
Impact CUL-c: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	**No Impact**	
	—	—
Impact CUL-d: Disturb any human remains, including those interred outside of dedicated cemeteries	**Potentially Significant**	
	Changes in reservoir levels could expose previously inundated land containing human burials, which could result in the disturbance of the burial and impacts from human activity	**MM-CUL-d: Mitigate impacts of project that could disturb any human remains, including those interred outside of dedicated cemeteries** Implement Mitigation Measure MM-CUL-a,b
	Less than Significant	
	Changes in river flows could alter the baseline conditions of human burials interred within or outside of dedicated cemeteries	—
ENERGY		
Impact EN-a: The effects of the project on energy resources	**Potentially Significant**	
	Changes in hydrology would result in a decrease in hydropower generation in the summer which could be significant for an	**MM-EN-a–e: Mitigate the project effects on energy resources[1]**

Impact	Impact Conclusions	Proposed Mitigation
Impact EN-b: The effect of the project on peak and base period demands for electricity and other forms of energy **Impact EN-c:** The effects of the project on local and regional energy supplies and requirements for additional capacity **Impact EN-d:** The degree to which the project complies with existing energy standards **Impact EN-e:** Energy requirements and energy use efficiencies by amount and fuel type for each stage of the project	individual project or community[1] Changes in water supply could cause an increase in energy use, to replace Sacramento/Delta supplies from actions such as increased groundwater pumping and other water management actions[1]	1. Reservoir Management (MM-AQUA-a,d: 1ii) 2. Coordination with Existing Requirements 3. Diversify Water Portfolios 4. Increase Water Use Efficiency 5. Promote the Use of Renewable Energy 6. Implement Greenhouse Gas Emissions Mitigation (MM-GHG-a and MM-GHG-b)
	Beneficial	
	Changes in water supply could result in a reduction in the energy used to export water from the Delta[1] Water conservation could result in a reduction in energy use	—
Impact EN-f: The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives	**Less than Significant**	
	Reduction in agricultural production could increase energy use for transportation	—
GEOLOGY AND SOILS		
Impact GEO-a: Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides	**No Impact**	
	—	—
Impact GEO-b: Result in substantial soil erosion or the loss of topsoil	**Less than Significant**	
	Agriculture fallowing could temporarily increase erosion and sedimentation	—
Impact GEO-c: Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse	**Potentially Significant**	
	Lower groundwater levels could exacerbate existing problems associated with ground subsidence	**MM-GEO-c: Mitigate impacts associated with unstable soils and steep slopes (landslide, lateral spreading, subsidence, liquefaction, or collapse)** 1. Actions to Reduce Subsidence

Impact	Impact Conclusions	Proposed Mitigation
		2. Reduce Impacts on Groundwater (MM-GW-b)
I**mpact GEO-d:** Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property	**No Impact**	
	—	—
Impact GEO-e: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater	**No Impact**	
	—	—
GREENHOUSE GAS EMISSIONS		
Impact GHG-a: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	**Potentially Significant**	
	Increased groundwater pumping from wells with diesel-powered pumps could generate additional greenhouse gas emissions Groundwater storage and recovery, water transfers, and water recycling could result in emissions associated with energy use	**MM-GHG-a: Mitigate impacts from greenhouse gas emissions** 1. Water Use Efficiency 2. Water Conservation 3. Energy Efficiency 4. Irrigation Systems 5. Restoration, Pricing Strategies, and Mitigation Credits 6. Implement Energy Mitigation (Mitigation Measure MM-EN-a–e: 1-5) 7. Implement Mitigation Measure MM-GHG-b, Comply with applicable greenhouse gas emissions reduction plans, policies, or regulations
	Less than Significant	
	Reductions in hydropower generation could result in additional energy generation at fossil-fuel facilities Increased groundwater pumping from wells with electric fuel pumps could generate additional greenhouse gas emissions	—

Impact	Impact Conclusions	Proposed Mitigation
	Beneficial	
	Changes in water supply could result in a reduction in the energy used to export water from the Delta and a corresponding reduction in greenhouse gas emissions[1] Water conservation could result in a reduction in energy use and greenhouse gas emissions	
Impact GHG-b: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	**Potentially Significant**	
	Increased groundwater pumping from wells with diesel-powered pumps could result in emissions in excess of existing thresholds and could conflict with the state's long-term emission reduction trajectory	**MM-GHG-b: Comply with applicable greenhouse gas emission reduction plans, policies, or regulations** 1. Implement Air Quality Plans and Programs 2. Renewable Energy 3. Implement Mitigation Measure MM-GHG-a: 1–6, Mitigate impacts from greenhouse gas emissions
	Beneficial	
	Water use efficiency, water recycling, and reuse of urban runoff would be beneficial in meeting other state and local GHG goals	—
HAZARDS AND HAZARDOUS MATERIALS		
Impact HAZ-a: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	**No Impact**	
	—	—
Impact HAZ-b: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	**No Impact**	
	—	—
Impact HAZ-c: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	**No Impact**	
	—	—

Impact	Impact Conclusions	Proposed Mitigation
Impact HAZ-d: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment	**No Impact**	
	—	—
Impact HAZ-e: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area	**No Impact**	
	—	—
Impact HAZ-f: For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area	**No Impact**	
	—	—
Impact HAZ-g: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	**No Impact**	
	—	—
Impact HAZ-h: Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands	**Less than Significant**	
	Changes in reservoir levels in areas likely to continue experiencing forest fires could affect wildland fire suppression practices	—
HYDROLOGY & WATER QUALITY—SURFACE WATER		
Impact SW-a: Violate any water quality standards or waste discharge requirements **Impact SW-f**: Otherwise substantially degrade water quality	**Potentially Significant**	
	Reduced streamflows could result in less dilution and increased concentration of contaminants in some locations Flow commitments could increase contaminant (e.g., boron, nitrate, and mercury) concentrations to harmful levels and could increase cyanobacteria, cyanotoxins, or HABs*[2] Increased flows could result in increased input of mercury and methylmercury production downstream in some locations	**MM-SW-a,f: Avoid or reduce violations of water quality standards or waste discharge requirements, and/or degradations of water quality** 1. Water Quality Contaminants and Regulation of Waste Discharges 2. Minimize Mercury Impacts 3. Reservoir Management (MM-AQUA-a,d: 1)

Impact	Impact Conclusions	Proposed Mitigation
	Increases in water level fluctuation at some reservoirs could result in increased bioaccumulation of methylmercury in fish Changes in reservoir levels and lowered streamflows below reservoirs could result in increased water temperature in some locations and times of year Changes in reservoir levels could result in increased production of HABs in some locations Lower summer and fall flows in some Delta channels could result in incremental increased production of HABs and invasive aquatic plants[1] Reduced streamflows could result in temporary exceedances of waste discharge requirements and/or water quality standards[1] Changes in water supply could result in temporary exceedances of maximum contaminant levels in municipal water supply[1] Changes in water supply, including use of alternative lower water quality sources in response to reduced Sacramento/Delta supply to municipal use could result in site-specific exceedances of waste discharge requirements due to changes in wastewater treatment plant (WWTP) influent and effluent quality and quantity[1] Reductions in delivery of higher quality Sacramento/Delta supplies to managed wetlands, including wildlife refuges could affect water quality[1] Reductions in groundwater accretions could cause decreases in water quality associated with lower streamflows or higher temperatures Diversion of surface water for groundwater storage and recovery could limit the dilution effect of existing flows and exacerbate existing	4. Avoid or Reduce Harmful Algal Blooms and Invasive Aquatic Weeds 5. Protect Municipal Water Quality 6. Reduce Impacts on Groundwater (MM-GW-b) 7. Agricultural Drainage Control 8. Diversify Water Portfolios 9. Support and Approval of Groundwater Storage and Recovery 10. Oversight and Approval of Water Transfers 11. Support and Approval of Water Recycling 12. Water Quality Monitoring and Management in Putah Creek[2]

Impact	Impact Conclusions	Proposed Mitigation
	water quality impairments* Increased use of water transfers could affect water quality in some locations Increased water recycling could reduce instream flows, which could reduce dilution of local sources of contaminants*	
	Less than Significant	
	Changes in flows could result in moderately elevated turbidity and total suspended solids (TSS) levels in some locations, and reduced occurrence of the highest turbidity and TSS levels Increased Delta outflow would result in little change or beneficial reductions in electrical conductivity (EC) in the Delta Increased Delta outflow would result in little change or beneficial reductions in chloride and bromide at municipal intakes in the Delta Increased floodplain inundation could affect nutrients, organic material, invasive aquatic plants, and HABs	—
	Beneficial	
	Reduced seawater intrusion could result in water quality improvements in the Delta, including dilution and flushing of some contaminants and reductions in EC, bromide, and chloride[1] Increased flows would enhance water quality for fish Increased flows could dilute certain constituents in waterbodies that would provide a water quality benefit Increased Delta outflows could reduce HABs and invasive vegetation	—

Impact	Impact Conclusions	Proposed Mitigation
Impact SW-c: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site **Impact SW-d:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site	**Potentially Significant**	
	Increases in Clear Creek flow downstream of Whiskeytown Lake could increase risk of erosion and flooding in this area*[1]	**MM-SW-i: Avoid or reduce exposure of people or structures to flood risk on Clear Creek**[1]
	Beneficial	
	A more natural flow regime could contribute to the restoration of beneficial geomorphic processes (i.e., those that clean fine sediment from spawning gravels, maintain a diversity of bed forms, and help maintain functional floodplain and riparian habitats through floodplain inundation) Changes in Delta inflows would provide for floodplain inundation to benefit native species	—
Impact SW-e: 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	**No Impact**	
	—	—
Impact SW-g: Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map **Impact SW-h:** Place within a 100-year flood hazard area structures which would impede or redirect flood flows	**No Impact**	
	—	—
Impact SW-i: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam	**Potentially Significant**	
	Increases in Clear Creek flow downstream of Whiskeytown Lake could increase the risk of downstream flooding in this area*[1]	**MM-SW-i: Avoid or reduce exposure of people or structures to flood risk on Clear Creek**[1]
Impact SW-j: Inundation by seiche, tsunami, or mudflow	**No Impact**	
	—	—

Impact	Impact Conclusions	Proposed Mitigation
HYDROLOGY & WATER QUALITY—GROUNDWATER		
Impact GW-b: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)	**Potentially Significant**	
	Increased groundwater pumping and reductions in incidental groundwater recharge from applied irrigation could lower groundwater levels and contribute to groundwater overdraft Lower groundwater levels could result in an increase in frequency and severity of critical shortages or dry wells occurring in some areas for communities that rely on groundwater, including economically disadvantaged communities Reduced Sacramento/Delta supplies could have localized impacts on groundwater storage in areas where Sacramento/Delta supplies are used for groundwater banking Surface water transfers through groundwater substitution could result in lower groundwater levels in basin of origin Agricultural conservation measures could reduce incidental groundwater recharge that would lower groundwater levels	**MM-GW-b: Mitigate the substantial depletion of groundwater supplies or the substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level** 1. Implement the Sustainable Groundwater Management Act (SGMA) 2. SGMA Oversight 3. Diversify Water Portfolios 4. Support and Approval of Groundwater Storage and Recovery 5. Support and Approval of Water Recycling Projects 6. Oversight and Approval of Water Transfers
	Less than Significant	
	Reduced flows downstream of reservoirs could affect stream-aquifer interactions Increased water recycling could have effects on groundwater levels Municipal water conservation measures could reduce incidental groundwater recharge from urban runoff	—
	Beneficial	
	Groundwater storage and recovery could enhance groundwater levels	—

Impact	Impact Conclusions	Proposed Mitigation
	Water recycling could increase groundwater levels in some areas if a portion of the recycled water reaches the aquifer or if the recycled water offsets a use that previously was supplied by groundwater	
Impact GW-a: Violate any water quality standards or waste discharge requirements **Impact GW-f:** Otherwise substantially degrade water quality	**Potentially Significant**	
	Lower groundwater levels can result in changes in groundwater flow direction and gradients in localized areas, which could exacerbate the migration of contaminants In some locations, lower groundwater levels may concentrate salts and nutrients in groundwater over time through evaporative enrichment Lower groundwater levels could affect groundwater quality and potentially affect drinking water wells in some areas, including economically disadvantaged communities Lower groundwater levels could have localized effects on groundwater quality by concentrating pollutants where groundwater contamination already exists Groundwater storage and recovery projects that use poor quality water to recharge groundwater basins could contribute to salt and nutrient loading or introduce contaminants to the underlying aquifer* Other water management actions (water transfers through groundwater substitution and agriculture water conservation) could result in lower groundwater levels, which could exacerbate groundwater quality impairments or contribute to contaminant loading in localized areas	**MM-GW-a,f: Mitigate impacts to groundwater quality from depletion of groundwater supplies or the substantial interference with groundwater recharge** 1 Drinking Water Programs 2. Implement the State and Regional Board's Irrigated Lands Regulatory Program 3. Reduce Impacts on Groundwater (MM-GW-b)

Impact	Impact Conclusions	Proposed Mitigation
	Less than Significant	
	Recycled water may percolate into the underlying groundwater basin, and could affect groundwater quality	—
	Beneficial	
	Increased infiltration from stream-aquifer interactions from increased flows in the Sacramento/Delta could improve groundwater quality Groundwater storage and recovery projects that use high-quality water to recharge groundwater basins may provide an effective strategy to maintain or improve groundwater quality	—
LAND USE AND PLANNING		
Impact LU-a: Physically divide an established community	**No Impact**	
	—	—
Impact LU-b: Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect	**No Impact**	
	—	—
Impact LU-c: Conflict with any applicable habitat conservation plan or natural community conservation plan	**Less than Significant**	
	See also Section 7.6.1, *Terrestrial Biological Resources*, and Section 9.7.6.1, *Terrestrial Biological Resources*, Impact TER-f	—
MINERAL RESOURCES		
Impact MIN-a: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state	**No Impact**	
	—	—

Impact	Impact Conclusions	Proposed Mitigation
Impact MIN-b: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan	**No Impact**	
	—	—
NOISE		
Impact NOI-a: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies **Impact NOI-c:** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project **Impact NOI-d:** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project	**Potentially Significant**	
	Increased groundwater pumping for replacement water supply, groundwater storage and recovery, or groundwater substitution transfers could result in higher noise levels	**MM-NOI-a,c,d: Mitigate exposure of persons to or generation of noise levels in excess of established standards and to substantial permanent or temporary increases in ambient noise levels in the project vicinity** 1. Applicable Policies and Regulations 2. Noise-Reduction Consideration in Operations
Impact NOI-b: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels	**Less than Significant**	
	Increased groundwater pumping could result in localized and intermittent perceptible vibration	—
Impact NOI-e: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels	**No Impact**	
	—	—
Impact NOI-f: For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels	**No Impact**	
	—	—
POPULATION AND HOUSING		
Impact POP-a: Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or	**No Impact**	
	—	—

Impact	Impact Conclusions	Proposed Mitigation
indirectly (for example, through extension of roads or other infrastructure)		
Impact POP-b: Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere	**No Impact**	
	—	—
Impact POP-c: Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere	**No Impact**	
	—	—
PUBLIC SERVICES		
Impact PS-a: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities	**No Impact**	
	—	—
RECREATION		
Impact REC-a: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	**Potentially Significant**	
	Changes in reservoir levels could affect boat ramp accessibility affecting recreation opportunities at some reservoirs[1] Incremental increase in potential harmful algal blooms could cause closures to recreation in some waterbodies	**MM-REC-a: Mitigate recreation impacts associated with reservoir level changes** 1. Reservoir Management (MM-AQUA-a–d: 1)[1] 2 Recreation Management Measures[1] 3. Protect Water Quality and Avoid or Reduce Harmful Algal Blooms and Invasive Aquatic Weeds (MM-SW-a,f: 1, 3–5, and 7)
	Less than Significant	
	Reduced summer flows could affect the boating difficulty of rapids for rafting and kayaking at some locations	—

Impact	Impact Conclusions	Proposed Mitigation
	Increased spring and early summer flows could reduce opportunities for swimming or wading in rivers at some locations Changes in reservoir water surface area and elevation could affect sportfish populations and reduce fishing opportunities at some locations Reduced deliveries to wildlife refuges and agricultural lands could affect recreational opportunities (e.g., wildlife viewing) Reduced municipal water supply could affect municipal recreational opportunities at parks, playfields, and swimming pools[1]	
	Beneficial	
	Changes in flow could improve recreational opportunities	—
Impact REC-b: Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment	**Potentially Significant**	
	Changes in reservoir levels could affect boat ramp accessibility and lead to modification of existing or development of new boat ramps in some locations[1]	**MM-REC-b: Mitigate impacts from construction or expansion of recreational facilities (boat ramps)**[1] 1. Implement MM-REC-a 2. If construction of new or modified boat ramps is necessary, implement mitigation measures described in Appendix H3, *Mitigation Measures for the Revised Proposed Plan Amendments*
TRANSPORTATION/TRAFFIC		
Impact TRA-a: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit	**Less than Significant**	
	Increased intermittent inundation of floodplains bounded by levees where roads and pedestrian and bicycle paths exist could affect transportation Increased closures of the Delta Cross Channel (DCC) gates could affect recreational boat navigation[1]	—

Impact	Impact Conclusions	Proposed Mitigation
Impact TRA-f: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities	Changes in agricultural land use or fallowing could lead to changes in agricultural product-related transportation	
Impact TRA-b: Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways	**No Impact**	
	—	—
Impact TRA-c: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks	**No Impact**	
	—	—
Impact TRA-d: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	**No Impact**	
	—	—
Impact TRA-e: Result in inadequate emergency access	**No Impact**	
	—	—
UTILITIES AND SERVICE SYSTEMS		
Impact UT-a: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board	**Potentially Significant**	
	Changes in hydrology and water supply could alter the assimilative capacity of some streams where treated wastewater is discharged[1] Changes in water supply could result in the use of other lower quality water supply sources that affect WWTP influent and effluent[1] Reduced municipal supply and increased indoor water conservation could lead to a decrease in the production of wastewater and increase chemical constituent concentrations in WWTP influent[1]	**MM-UT-a: Avoid or reduce potential to exceed wastewater treatment requirements** 1. Water Quality Contaminants and Regulation of Waste Discharges[1] 2. Protect Municipal Water Quality[1] 3 Increased Coordination between Water Suppliers and Wastewater Agencies[1] 4. Minimize Surface Water Quality Effects on Wastewater Treatment Plants (MM-SW-a,f)[1]

Impact	Impact Conclusions	Proposed Mitigation
	Groundwater storage and recovery or water transfers could increase concentrations of some pollutants of concern in WWTP influent, if the source of the stored groundwater or transfer is of lower quality	5. Minimize Groundwater Quality Effects on Wastewater Treatment Plants (MM-GW-a,f)
Impact UT-b: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	**Potentially Significant**	
	Changes in hydrology and water supply could result in construction to modify or expand existing treatment facilities in order to prevent or mitigate exceedances of drinking water standards and wastewater discharge water quality objectives[1]	**MM-UT-b: Avoid or reduce impacts from the construction of new water or wastewater treatment facilities or expansion of existing facilities**[1] 1. Implement Mitigation Measure MM-UT-a 2. If construction of new water or wastewater treatment facilities or expansion of existing facilities is necessary, implement mitigation measures described in Appendix H3, *Mitigation Measures for the Revised Proposed Plan Amendments*
Impact UT-c: Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	**No Impact**	
	—	—
Impact UT-d: Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed	**Potentially Significant**	
	Reduced Sacramento/Delta supply to municipal use could affect municipal water supplies[1] Reduced groundwater levels could affect water supplies for communities that rely on groundwater as their primary municipal water source, including economically disadvantaged communities Reduced streamflows and water levels at some locations could affect the ability of existing diversion intakes to divert water, which could affect municipal water supplies[1]	**MM-UT-d: Avoid or reduce impacts on municipal supplies** 1. Diversify Water Portfolios 2. Increase Water Use Efficiency 3. Human Health and Safety Provision[1] 4. Prioritize Water Supplies for Health and Safety 5. Reduce Impacts on Groundwater (MM-GW-b)

Impact	Impact Conclusions	Proposed Mitigation
		6. Protect Municipal Water Supplies (MM-UT-a)[1] 7. Ensure Effectiveness of Diversion Intakes (MM-AG-a,e: 6)[1]
	Beneficial	
	Other water management actions (groundwater storage and recovery, water transfers, water recycling, water conservation) could contribute to meeting water demands for municipal use	—
Impact UT-e: Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments	**No Impact**	
	—	—
Impact UT-f: Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs **Impact UT-g:** Comply with federal, state, and local statutes and regulations related to solid waste	**Less than Significant**	
	Changes to agricultural crop type or production resulting from changes in water supply could generate solid waste[1] Increased water recycling could lead to an increase in solid waste byproducts	—

† Table 1-1 is the same Impact and Mitigation Measure Summary Table presented in Section 13.7.22, *Impact Summary* (see Table 13.7.22-1).

[1] Beneficial effects and potentially significant impacts and proposed mitigation measures that apply only to the regulatory pathway and not the VA pathway.

[2] Potential impacts and proposed mitigation measures that apply only to the VA pathway and not the regulatory pathway.

DCC = Delta Cross Channel; EC = electrical conductivity; HAB = harmful algal bloom; HRL = Healthy Rivers and Landscapes; TSS = total suspended solids; WWTP = wastewater treatment plant

Table 1-2. Impact and Mitigation Measure Summary—Habitat Restoration and Other Ecosystem Projects †

Impact	Impact Conclusions	Proposed Mitigation
AESTHETICS		
Impact AES-a: Have a substantial adverse effect on a scenic vista **Impact AES-b:** Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway **Impact AES-c:** Substantially degrade the existing visual character or quality of the site and its surroundings **Impact AES-d:** Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	**Potentially Significant**	
	Common Construction [a] Construction may physically damage scenic resources, introduce large construction equipment, remove vegetation, stockpile materials, create dust, or add new sources of lighting and glare Permanent installation of artificial elements (e.g., riprap), solar panels, and/or security and safety lighting	**7.21 MM-AES-a–d: Mitigate impacts on visual resources** **A. Construction AES Mitigation Measures (CMM-AES-a–d)** 1. Project Siting and Design 2. Screen Construction Areas 3. Spoil Disposal Areas 4. Dust Control Measures (CMM-AQ-a–e: 3) 5. Waste Management and Material Control Measures (CMM-WQ-a–j: 4) 6. Light and Glare Minimization 7. Construction BIO Mitigation Measures: Avoid Vegetation Disturbance (CMM-BIO-a–f: 9), Revegetation Plan (CMM-BIO-a–f: 11) and Revegetation Monitoring and Reporting (CMM-BIO-a–f: 12)
	Physical Habitat Restoration Long-term changes to the quality of visual resources from the addition of hardscape elements (e.g., fence, bench, erosion control structures), additional or modified water infrastructure (e.g., water storage structures and associated delivery lines), or gravel augmentation	**B. Physical Habitat Restoration AES Mitigation Measures** 1. Project Design 2. Physical Habitat Restoration BIO Mitigation Measures (7.21 MM-BIO-a–f: C)
	Fish Passage Improvements Changes in a scenic vista from dam removal Large areas of bare sediment and rock could be exposed in previously inundated areas after reservoir drawdown and removal	**C. Dam Removal AES Mitigation Measures** 1. Project Planning 2. Dam Removal BIO Mitigation Measures (7.21 MM-BIO-a–f: E) 3. Revegetation Plan

Impact	Impact Conclusions	Proposed Mitigation
	Less than Significant/No Impact	
	Invasive Aquatic Vegetation Control Temporary and short duration use of mechanical harvester equipment and areas of vegetation decay after herbicide use Minimal increase of glare from removal of vegetation and return of open water	—
	Beneficial	
	Physical habitat restoration could enhance the visual character or quality of an area and improve views from a scenic vista by returning disturbed areas to a more natural state Invasive aquatic vegetation control could improve the visual character and quality of surface waters and improve views from a scenic vista by returning clogged waterways to open water	—
AGRICULTURE AND FOREST RESOURCES		
Impact AG-a: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use **Impact AG-b:** Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract **Impact AG-c:** Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as	**Potentially Significant**	
	Common Construction [a] Construction activities could remove vegetation and/or topsoil; introduce invasive weeds; restrict access to or interfere with use of agricultural land; disturb utilities and infrastructure serving agriculture; and disturb soil in development footprints, borrow/spoils areas or staging areas (e.g., soil compaction resulting from heavy equipment storage or soil stockpiling)	**7.21 MM-AG-a–e: Mitigate impacts on agriculture and forest resources** **A. Construction AG Mitigation Measures (CMM-AG-a–e)** 1. Project Siting and Design 2. Invasive Species Control Measures 3. Postconstruction Best Management Practices 4. Protect Agricultural Soils 5. Agricultural Mitigation Consistent with County and Local Jurisdiction Requirements 6. Avoid or Minimize Impacts on Forest and Timberland

Impact	Impact Conclusions	Proposed Mitigation
defined by Government Code Section 51104(g)) **Impact AG-d:** Result in the loss of forest land or conversion of forest land to non-forest use **Impact AG-e:** Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use	***Physical Habitat Restoration*** Long-term or permanent changes to agriculture resources due to project siting (i.e., convert the land to nonagricultural uses or conflict with existing zoning or with Williamson Act contracts) Incidental impacts on adjacent agricultural lands (e.g., seepage issues on adjacent land, herbicide use on invasive plant species)	**B. Physical Habitat Restoration AG Mitigation Measures** 1. Project Siting and Design 2. Agricultural Land Easements 3. Compatible Agricultural Practices 4. Monitor for Seepage 5. Consistency with Local and Regional Land Use Plans 6. Invasive Aquatic Vegetation Control BIO Mitigation Measures (7.21 MM-BIO-a–f: G2)
	Fish Passage Improvements Reduced or altered availability of water supplies for crop irrigation from dam removal Agricultural diversion headworks downstream of a dam could experience siltation or otherwise be affected during reservoir drawdown Reservoir removal could affect legal users of water if a diverter is dependent on the reservoir or reservoir infrastructure	**C. Dam Removal AG Mitigation Measure** 1. Dam Removal WQ Mitigation Measures (7.21 MM-WQ-a–j: G)
	Invasive Aquatic Vegetation Control Incidental impacts on adjacent agricultural lands from herbicide use	**D. Invasive Aquatic Vegetation Control AG Mitigation Measures** 1. Invasive Aquatic Vegetation Control BIO Mitigation Measures (7.21 MM-BIO-a–f: G2)
	Beneficial	
	Restoration projects could benefit agriculture by reducing soil erosion, recharging groundwater, providing natural pest control and water quality buffers Reservoir drawdown and dam removal could increase agricultural opportunities on currently inundated lands Increase in forest land following dam removal due to revegetation of previously	—

Impact	Impact Conclusions	Proposed Mitigation
	inundated lands with woody species Clearing invasive aquatic vegetation could benefit agricultural resources because these plants can interfere with irrigation intakes	
AIR QUALITY		
Impact AQ-a: Conflict with or obstruct implementation of the applicable air quality plan **Impact AQ-b:** Violate any air quality standard or contribute substantially to an existing or projected air quality violation **Impact AQ-c:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) **Impact AQ-d:** Expose sensitive receptors to substantial pollutant concentrations **Impact AQ-e:** Create objectionable odors affecting a substantial number of people	**Potentially Significant**	
	Common Construction [a] Construction activities could generate fugitive dust and emissions from fuel combustion in heavy construction equipment and vehicles Inadvertent dispersal of *Coccidioides* spores (responsible for Valley fever) and asbestos into the environment	**7.21 MM-AQ-a–e: Mitigate impacts on air quality** **A. Construction AQ Mitigation Measures (CMM-AQ-a–e)** 1. Regulatory Compliance 2. Emission Reduction Measures 3. Dust Control Measures 4. Valley Fever Control Measures 5. Asbestos Control Measures 6. Health Risk Assessment 7. Minimize Construction-Related Traffic and Equipment Use 8. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) for fugitive dust control
	Physical Habitat Restoration Objectionable odors sometimes associated with wetlands could affect nearby land uses, such as the closest recreational facilities and residential uses	**B. Odor Control Measures**
	Fish Passage Improvements Earthy or hydrogen sulfide odors may be evident during or immediately following reservoir drawdown for dam removal Substantial particulate emissions due to fugitive dust generated from blasting and cut-and-fill activities for dam removal Windblown dust from exposure of sediment deposits remaining in the	**B. Odor Control Measures** **C. Dam Removal AQ Mitigation Measures** 1. Site-Specific Dust Control Plan 2. Revegetation Plan (7.21 MM-BIO-a–f: E3) 3. Odor Control Measures (7.21 MM-AQ-a–e: B)

Impact	Impact Conclusions	Proposed Mitigation
	reservoir footprint after dam removal	
	Less than Significant	
	Fish Passage Improvements TCDs could result in short-term objectionable odors, such as from hydrogen sulfide, from an increase in the quantity of cool water pulled from deeper areas of a reservoir Dam removal could reduce power production if hydropower facilities are dismantled, resulting in increased criteria pollutant emissions at other power facilities or requiring construction and operation of a new powerhouse	—
	Invasive Aquatic Vegetation Control Emissions associated with chemical trucks, mechanical harvesters, haul trucks, and/or boats Temporary odors associated with herbicide spraying	—
	Beneficial	
	Physical Habitat Restoration Physical habitat restoration projects on agricultural lands could benefit air quality by reducing emissions associated with active agricultural operations	—
BIOLOGICAL RESOURCES		
Impact BIO-a: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact BIO-b:** Have a substantial adverse effect	**Potentially Significant**	
	Common Construction [a] Construction projects could be located in a sensitive natural community, habitat for special-status species, wetlands, wildlife corridors, or waterways Direct or indirect harm (including mortality) to special-status species and	**7.21 MM-BIO-a–f: Mitigate impacts on biological resources** **A. Construction BIO Mitigation Measures (CMM-BIO a–f)** 1. Regulatory Compliance 2. Preconstruction Surveys

Impact	Impact Conclusions	Proposed Mitigation
on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact BIO-c:** Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrolgical interruption, or other means **Impact BIO-d:** Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites **Impact BIO-e:** Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance **Impact BIO-f:** Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	associated habitat from movement of heavy machinery where such species occur Disturbance of special-status species through construction noise, physical vibration, and direct removal of structures that provide habitat Introduction or spread of invasive vegetative species through the movement of topsoil, fill, gravel, and construction equipment Removal of riparian vegetation and disturbance to wetlands to facilitate heavy equipment movement and other construction activities Release of sediment and possibly hazardous materials (e.g., oil or gas from construction equipment) into waterbodies from construction on or near waterways Creation of noise and vibration that could harm fish from activities such as pile driving, blasting, or use of other construction equipment Release of concrete particles from blasting to surface waters could disturb terrestrial wildlife and harm fish Take of special-status fish species could result from construction and installation of cofferdams (resulting in fish stranding) or fish rescue in a dewatered area (seining, electrofishing) Some construction projects may conflict with adopted habitat conservation plans (HCPs) or natural community conservation plans (NCCPs)	3. Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities 4. Avoid, Minimize, or Compensate for Impacts on Special-Status Species 5. Environmental Awareness Training 6. Incorporate Protection Measures for In-Water Construction 7. Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species during Construction 8. Invasive Species Control Measures 9. Avoid Vegetation Disturbance 10. Staging Areas 11. Revegetation Plan 12. Revegetation Monitoring and Reporting 13. Compliance with HCPs and NCCPs 14. Construction WQ Mitigation Measures (CMM-WQ-a–j) 15. Avoid or Minimize Lighting and Glare Effects 16. Dust Control Measures (CMM-AQ-a–e: 3) 17. Construction NOI Mitigation Measures: Noise-Reduction Measures (CMM-NOI-a,b,d–f: 2) and Vibration-Reduction Measures (CMM-NOI- a,b,d–f: 3) 18. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7)

Impact	Impact Conclusions	Proposed Mitigation
	Physical Habitat Restoration Loss of riparian habitat and large trees Adversely affect species by changing habitat types from some habitat restoration projects (e.g., non-tidal aquatic habitats to tidal aquatic habitats, conversion of agriculture land to native riparian habitat) Creation of barriers such as shallow puddles leading to fish stranding from floodplain drainage Facilitation of methylmercury production and subsequent bioaccumulation in fish and other wildlife species from the creation of freshwater wetlands and floodplains Increased predation on sensitive fish species that use shallow-water floodplain habitats from floodplain restoration Application of toxic herbicides and pesticides from increased invasive plant species and creation of mosquito habitat could adversely affect aquatic and terrestrial species Effects on fish spawning from addition of course sediment and various in-channel activities of gravel augmentation projects Mortality of salmon and steelhead embryos and alevins due to gravel placement Effects on salmon and salmon redds due to increased turbidity and sedimentation due to gravel placement	**B. Approval by State and Federal Fisheries Agencies** • NMFS' programmatic restoration biological opinion to facilitate implementation of restoration projects in the Central Valley • CDFW's California Salmonid Stream Habitat Restoration Manual • NMFS' Guidelines for Salmonid Passage at Stream Crossings • NMFS' Fish Screening Criteria for Anadromous Salmonids • NMFS' Science Base and Tools for Evaluating Stream Engineering, Management, and Restoration Proposals **C. Physical Habitat Restoration BIO Mitigation Measures** 1. Restoration Strategy 2. Adaptive Management 3. Biological Goals 4. Avoid Fish Stranding 5. Vegetation Management 6. Physical Habitat Restoration WQ Mitigation Measures (7.21 MM-WQ-a–j: E) 7. Invasive Species Control 8. Gravel Augmentation BIO Mitigation Measures 9. Approval by State and Federal Fisheries Agencies (7.21 MM-BIO-a-f: B)
	Fish Passage Improvements Improperly designed fish passage projects can obstruct and injure fish species (e.g., incorrect velocities of fish screens can impinge fish) Increase depth of warm epilimnion in	**D. Fish Passage BIO Mitigation Measures** 1. Consultation with Fish and Wildlife Agencies 2. TCD Design 3. Approval by State and Federal Fisheries Agencies (7.21 MM-BIO-a-f: B) **E. Dam Removal BIO Mitigation Measures**

Impact	Impact Conclusions	Proposed Mitigation
	reservoir by drawing down the depth of the thermocline from operation of TCDs Introduction of special-status species to inhospitable habitat and/or creation of conditions to allow previously blocked invasive species upstream from fishways and dam removal projects Elevated suspended sediment concentrations resulting from the release of sediment stored behind a dam can adversely affect or cause mortality of sensitive life stages of special-status fish, amphibians and reptiles, as well benthic macroinvertebrates occurring downstream of dam removal sites.; subsequent sedimentation could adversely affect salmonid spawning areas Sediments from dam removal can contain toxic pollutants (e.g., metals or bioaccumulative compounds including legacy pesticides and methylmercury) Sediment may temporarily deposit in pools and other slack water areas (e.g., eddies), at tributary confluences, and potentially along channel margins High levels of sediment and turbidity can adversely affect aquatic ecosystems by reducing photosynthetic activity, reducing food availability, burying habitat, and directly harming organisms Supersaturation of nitrogen gas (water containing more dissolved gas than normal) can occur when a reservoir is drawn down too quickly Dam removal would change reservoir to riverine habitat, which could alter habitat	1. Project Planning 2. Regulatory Compliance 3. Revegetation Plan 4. Dam Removal WQ Mitigation Measures (7.21 MM-WQ-a–j: G)

Impact	Impact Conclusions	Proposed Mitigation
	availability for some aquatic and terrestrial species	
	Predatory Fish Control Cause turbidity and startling of native fish from direct methods of predatory fish control (e.g., electrofishing, hook-and-line fishing, passive trapping) and active capture methods (e.g., trawls, beach seines) Inadvertant capture of and harm to native fish from capture methods (e.g., hook-and-line, traps, and electrofishing)	**F. Predatory Fish Control BIO Mitigation Measures** 1. Regulatory Compliance 2. BMPs for Hook-and-Line Sampling 3. Selective Capture 4. Fish Handling
	Invasive Aquatic Vegetation Control Harm from direct contact with workers and equipment or if plant fragments are left to propagate Harm to sensitive habitats, plants, and wildlife species from use of herbicides	**G. Invasive Aquatic Vegetation Control BIO Mitigation Measures** 1. Physical-Control Methods 2. Chemical-Control Methods
	Beneficial	
	Physical Habitat Restoration Physical habitat restoration projects that complement flow actions (e.g., creation of floodplain and tidal shallow-water habitat) would generally be expected to improve habitat conditions for native species such as Chinook salmon and steelhead Change in some habitat types from some habitat restoration projects to benefit some plant and animal species (e.g., non-tidal aquatic habitats to tidal aquatic habitats, conversion of agriculture land to native riparian habitat) Improve the quality and extent of riparian habitat and wildlife access to habitat by removing invasive vegetation and substantially increasing the total riparian area	—

Impact	Impact Conclusions	Proposed Mitigation
	Restoration of long stretches of riparian habitat would restore and enhance habitat for native and migratory corridor species	
	Fish Passage Improvements New or improved fish screens would reduce impingement and entrainment at diversions New or improved fishways would improve passage conditions for adult Chinook salmon and steelhead and provide greater access to upstream habitat TCDs would be expected to support cooler temperatures downstream of dams and thereby create migration, spawning, and rearing conditions beneficial for Chinook salmon and steelhead and other native cold water species Dam removal projects would be expected to benefit anadromous salmonids by restoring access to historical habitat that is currently blocked by impassible dams	—
	Predatory Fish Control Removal or modification of human-made structures may allow fish to access more and better habitat and decrease predation	—
	Invasive Aquatic Vegetation Control Improved habitat for native aquatic species by allowing regrowth of native plant species and improving water quality (e.g., increasing dissolved oxygen levels)	—
CULTURAL RESOURCES		
Impact CUL-a: Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 **Impact CUL-b:** Cause a substantial adverse change	**Potentially Significant**	
	Common Construction [a] Ground-disturbing activities, including deep excavation, could damage	**7.21 MM-CUL-a–d: Mitigate impacts on cultural resources** **A. Construction CUL Mitigation Measures**

Impact	Impact Conclusions	Proposed Mitigation
in the significance of an archaeological resource pursuant to § 15064.5 **Impact CUL-c:** Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature I**mpact CUL-d:** Disturb any human remains, including those interred outside of formal cemeteries	archaeological sites or historic built environment resources or degrade unknown buried or near-surface cultural resources Changes in topography, hydrologic patterns, and soil movement could degrade or otherwise affect near-surface archaeological or built environment resources Construction activities could alter the appearance of a historic resource from dust interacting with an object's surface, which could cause damage or chemical alteration Temporary or permanent visual obstructions from the presence of large-scale equipment, machinery, and vehicles could diminish the integrity of cultural resources Unauthorized removal or vandalism of cultural resources could occur if construction enables access to cultural sites that were not previously known or accessible Access to cultural resources during construction could be reduced and thereby prevent or impair visits to cultural resources by people with a religious or cultural connection to the resource Vegetation clearing, generation of dust, and visual obstructions from the presence of large-scale equipment, machinery, and vehicles could result in impacts on cultural resources that have an associated landscape or other visual component that contributes to their significance, such as a sacred landscape or historic trail	**(CMM-CUL-a–d)** 1. Regulatory Compliance 2. Preconstruction Surveys for Historical, Archaeological, and Paleontological Resources, Cultural Landscapes, and Traditional Cultural Properties 3. Cultural Resources Management Plan 4. Unanticipated Discovery Measures 5. Oversight and Monitoring of Construction Activities 6. Worker Cultural Resources Sensitivity Training 7. Dust Control Measures (CMM-AQ-a–e: 3) 8. Construction NOI Mitigation Measures: Noise-Reduction Measures (CMM-NOI-a,b,d–f: 2) and Vibration-Reduction Measures (CMM-NOI-a,b,d–f: 3) 9. Construction Site Security Measures (CMM-HAZ-a–h: 7) 10. Construction AES Mitigation Measures: Project Siting and Design (CMM-AES-a–d: 1) and Screen Construction Areas (CMM-AES-a–d: 2)

Impact	Impact Conclusions	Proposed Mitigation
	Pile driving could cause vibration that could physically damage or alter nearby historic built environment resources or linear features	
	Fish Passage Improvements Older structures that would be removed or modified from TCD and dam removal projects could be eligible for listing in the National Register of Historic Places or California Register of Historic Places Reservoir drawdown prior to dam removal could result in shifting, erosion, and exposure of known or as-yet-unrecorded previously submerged cultural resources or human remains	**B. Fish Passage CUL Mitigation Measures** 1. Historic Dams and Structures 2. Project Planning 3. Cultural Resources Management Plan 4. Coordination with General or Resource Management Plan 5. Human Remains
	Less than Significant	
	Physical Habitat Restoration Operation of restoration areas would have a very low potential to affect cultural resources because operations would be along the riverbank and channels	—
	Invasive Aquatic Vegetation Control Operations would involve limited ground-disturbing activities and therefore would have a low potential for disturbing any known or as-yet-unrecorded cultural resources	—
ENERGY AND GREENHOUSE GAS EMISSIONS		
Impact EN-a: Adversely affect the reliability of California's electric grid **Impact EN-b:** Result in inefficient, wasteful, and unnecessary energy consumption **Impact GHG-a:** Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	**Potentially Significant**	
	Common Construction [a] Temporary increase in energy demand from heavy construction equipment (e.g., trucks or barges, earthmoving equipment, and power tools) for actions such as excavating, grading, transporting materials,	**7.21 MM-EN-a,b/GHG-a,b: Mitigate energy and GHG emissions impacts** **A. EN/GHG Mitigation Measures (CMM-EN-b/GHG-a,b)** 1. Regulatory Compliance 2. GHG Emission Reduction Measures

Impact	Impact Conclusions	Proposed Mitigation
Impact GHG-b: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	and transporting construction workers to and from the work sites Generation of GHG emissions from heavy construction equipment, haul trucks, and worker vehicles Construction activities could remove vegetation that acts to sequester GHGs (e.g., trees) GHG emissions from construction could conflict with an applicable GHG plan, policy, or regulation	3. Construction AQ Mitigation Measures: Regulatory Compliance (CMM-AQ-a–e: 1), Emission Reduction Measures (CMM-AQ-a–e: 2), and Minimize Construction-Related Traffic and Equipment Use (CMM-AQ-a–e: 7)
	Fish Passage Improvements Removing a hydropower dam could result in increased GHG emissions from replacing the renewable source of power with a non-renewable alternate source (including GHG-emitting fossil fuels)	**B. Dam Removal EN/GHG Measures** 1. Feasibility Studies 2. Renewable Energy 3. Increase Power Generation
	Less than Significant	
	Physical Habitat Restoration Periodic use of heavy equipment to replenish gravel at gravel augmentation sites	—
	Invasive Aquatic Vegetation Control Use of vehicles (e.g., chemical trucks, haul trucks, boats, and/or worker vehicles) and mechanical harvester equipment during vegetation control activities	—
	Beneficial	
	Operation of physical habitat restoration projects could reduce net GHG emissions by establishing, restoring, and enhancing tidal and freshwater wetlands, which provide more trees and plants that sequester carbon	—

Impact	Impact Conclusions	Proposed Mitigation
GEOLOGY AND SOILS		
Impact GEO-a: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides **Impact GEO-b:** Result in substantial soil erosion or the loss of topsoil **Impact GEO-c:** Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse I**mpact GEO-d:** Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property **Impact GEO-e:** Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of waste water	**Potentially Significant**	
	Construction activities could occur in areas known to have seismic activity or experience landslides, or could be located on expansive soil or on a geologic unit or soil that is unstable or would become unstable due to construction Construction activities could occur in areas underlain by soft or loose soils, where high groundwater or seepage may be present, and on sloping grounds Ground disturbance could expose geologic materials or soil, destabilize the material, and cause soil erosion or loss of topsoil Construction activity that involves blasting could trigger landslides on unstable slopes and expose construction workers or members of the public to the risk of injury or death	**7.21 MM-GEO-a–e: Mitigate geology and soils impacts** **A. Construction GEO Mitigation Measures (CMM-GEO-a–e)** 1. Regulatory Compliance 2. Project Siting and Design 3. Assurance of No Fault Traces 4. Geology and Soils Management Measures 5. Construction WQ Mitigation Measures: Regulatory Compliance (CMM-WQ-a–j: 1) and Erosion Control, Sedimentation Control, and Soil Stabilization Measures (CMM-WQ-a–j: 3) 6. Septic System Management Measures 7. Blasting Operations and Safety Plan 8. Protect Agricultural Soils (CMM-AG-a–e: 4)
	Physical Habitat Restoration Intended levee breaching could result in loss of topsoil and soil erosion	**B. Physical Habitat Restoration GEO Mitigation Measure**
	Fish Passage Improvements Large dam removal projects could result in hillslope instability in reservoir rim areas and erosion of slope sediments during reservoir drawdown The rate of reservoir drawdown could induce potential landslides along the reservoir margins or a slope failure of an embankment dam and cause additional erosion and sedimentation downstream	**C. Dam Removal GEO Mitigation Measures** 1. Feasibility Studies 2. Sediment Management and Monitoring Plan

Impact	Impact Conclusions	Proposed Mitigation
	Beneficial	
	Physical Habitat Restoration and Other Ecosystem Projects Planting and growth of native vegetation from habitat restoration activities and returning areas to a more natural state would decrease erosion and stabilize soils Enhanced in-channel projects designed to restore degraded rivers include bank stabilization measures that could reduce erosion	—
HAZARDS AND HAZARDOUS MATERIALS		
Impact HAZ-a: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials **Impact HAZ-b:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment **Impact HAZ-c:** Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school **Impact HAZ-d:** Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment **Impact HAZ-e:** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area **Impact HAZ-f:** For a project within the vicinity of a	**Potentially Significant**	
	Common Construction [a] Accidental release of hazardous materials from construction activities requiring the transport, use, or disposal of hazardous materials (e.g., fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, paint, paint thinner) Safety hazards could occur from rock thrown and scattered from use of explosives Exposure to or the spread of toxic chemicals from excavation during construction that disturb areas with existing soil or groundwater contamination (i.e., asbestos or lead-based paint from existing building materials or stored liquid paints, solvents, and household or industrial-strength maintenance chemicals and cleaners) Underground infrastructure (e.g., natural gas pipelines, utility lines) within a project area could be encountered during excavation and could result in hazards to	**7.21 MM-HAZ-a–h: Mitigate hazards and hazardous materials impacts** **A. Construction HAZ Mitigation Measures (CMM-HAZ-a–h)** 1. Measures for Transport, Use, or Disposal of Hazardous Materials 2. Project Siting 3. Demolition Measures 4. Herbicide and Pesticide Use 5. Hazardous Materials and Work Site Safety Training 6. Emergency Response Plan 7. Construction Site Security 8. Construction near Airports 9. Fire Prevention and Management Plan 10. Asbestos Control Measures (CMM-AQ-a–e: 5) 11. Valley Fever Control Measures (CMM-AQ-a–e: 4) 12. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) 13. Septic System Management Measures (CMM-GEO-a–e: 6)

Impact	Impact Conclusions	Proposed Mitigation
private airstrip, would the project result in a safety hazard for people residing or working in the project area **Impact HAZ-g:** Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan **Impact HAZ-h:** Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands	the public or environment if damaged Disturbance of soils containing *Coccidioides* spores may expose workers and people adjacent to construction sites to these fungal spores in fugitive dust Accidental hazardous materials spills from airborne materials (e.g., gases, asbestos particles) or through ignition of flammable liquids or vapors during construction activities could occur within 0.25 mile of a school Impairment of emergency response services' access or interfering with emergency evacuation by rerouting traffic during construction and increased need for emergency service providers during construction due to accidental releases of hazardous materials, work site fires, and vehicular accidents due to construction-related changes in traffic Wildfire risk from the use of electrical or gas-powered equipment, flammable materials (e.g., fuels, solvents), and/or explosives during construction Safety hazards from project components, such as buildings or construction equipment, that encroach on airspace of airport runways Stagnant water present in construction areas during the wet season could create new disease vector habitat (i.e., mosquito habitat) that require application of pesticides Faulty installation or inadequate operation and maintenance of underground or aboveground storage tanks for bulk fuel storage may result in surface water and	14. Mosquito Control Measures 15. Installation and Operation of Underground and Aboveground Storage Tanks 16. Installation and Maintenance of Plumbing in Public Restrooms

Impact	Impact Conclusions	Proposed Mitigation
	groundwater contamination, the potential for fire and explosion, exposure of the public to raw sewage, and daylighting of wastewater at the ground surface	
	Physical Habitat Restoration Exposure of application crews and the public to toxic chemicals from accidental release or improper use or storage of herbicides Increase in transmission of mosquito-borne diseases (e.g., West Nile virus) and application of pesticides from creating favorable conditions to mosquitos Restoration of floodplain, riparian, and tidal habitat in proximity to existing airport flight zones could increase bird-aircraft strikes Increase in vegetation could cause an increase in the risk of wildland fire by increasing the fuel load Wildfire risk could increase due to an increased number of cars and people visiting larger habitat restoration projects	**B. Physical Habitat Restoration HAZ Mitigation Measures** 1. Herbicide Application Control Measures 2. Mosquito Abatement Control Measures 3. Mitigate Potential Impacts on Air Traffic Safety 4. Wildfire Prevention Plan 5. Roadway Detour Plan (7.21 MM-TRA-a,b,d–f: B1) 6. Physical Habitat Restoration WQ Mitigation Measures (7.21 MM-WQ-a–j: E)
	Fish Passage Improvements Thermal curtains and associated structures could pose a physical safety hazard (e.g., collision) to recreationists in the vicinity of TCDs Remaining portions of a dam after dam removal could represent hazards to the public Construction-related traffic could cause hazards on existing transportation infrastructure (e.g., roadways, bridges, and culverts) en route to a dam removal site Demolition and disposal of structures	**C. Fish Passage Improvements HAZ Mitigation Measure** 1. Signage and Buoys for Temperature Control Curtains **D. Dam Removal HAZ Mitigation Measures** 1. Project Planning 2. Hazardous Materials Management Plan 3. Dam Removal WQ Mitigation Measures (7.21 MM-WQ-a–j: G) 4. Fire Management Plan

Impact	Impact Conclusions	Proposed Mitigation
	containing hazardous materials such as lead, asbestos, treated wood, coating contaminants (e.g., lead-based paint), batteries, chemicals, petroleum products, PCBs, and mercury could result in hazards to the public or the environment through accidental release Dust from drilling and cutting into large quantities of concrete during construction activities could pose a hazard to the public or the environment Additional traffic from commuting workers, hauling of large equipment, and disposal of wastes during construction could temporarily result in interference with an adopted emergency response plan or emergency evacuation Removal of reservoirs could increase the public's risk of loss, injury, or death associated with wildfires if other sources of water or means of fire suppression are not readily available; and increase a source of wildfire fuel in the form of dead trees and other vegetation around the former reservoir shoreline	
	Predatory Fish Control Electrofishing operations, if not implemented safely, could result in electrocution of nearby swimmers	**E. Predatory Fish Control HAZ Mitigation Measure** 1. Electrofishing Safety Best Management Practices
	Invasive Aquatic Vegetation Control Exposure of application crews and the public to toxic chemicals from accidental release or improper use of herbicides	**F. Invasive Aquatic Vegetation Control BIO Mitigation Measures** for chemical control (7.21 MM-BIO-a–f: G2)

Impact	Impact Conclusions	Proposed Mitigation
HYDROLOGY & WATER QUALITY—SURFACE WATER AND GROUNDWATER		
Impact WQ-a: Violate any water quality standards or waste discharge requirements **Impact WQ-b:** Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted) **Impact WQ-c:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site **Impact WQ-d:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site **Impact WQ-e:** 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 **Impact WQ-f:** Otherwise substantially degrade water quality **Impact WQ-g:** Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map **Impact WQ-h:** Place within a 100-year flood hazard area structures which would impede or redirect flood flows	**Potentially Significant** ***Common Construction*** [a] Construction could contribute polluted runoff and sediment to nearby water bodies In-water construction can cause temporary sediment disturbance and resuspension, which may cause increased turbidity, siltation, and bioavailability of sediment-associated pollutants Accidental release of pollutants that could enter storm drains or streams; pollutants include petroleum products (e.g., fuel, oil, grease from vehicles and equipment), paving materials (e.g., concrete and asphalt), other materials used or stored on site (e.g., paint, adhesives, and solvents), and project waste (e.g., litter, debris, hazardous and liquid waste) Use of herbicides to control invasive plant species could affect water quality and violate water quality standards if improperly applied or stored Faulty installation or inadequate operation and maintenance of underground or aboveground storage tanks for bulk fuel storage may result in surface water and groundwater contamination and release of raw sewage, which could affect groundwater and surface water quality Improper siting of septic systems could result in adverse water quality effects Localized degradation of groundwater quality could result from temporary, short-term constructions activities	**7.21 MM-WQ-a–j: Mitigate impacts on hydrology and water quality** **A. Construction WQ Mitigation Measures (CMM-WQ-a–j)** 1. Regulatory Compliance 2. Project Siting and Design 3. Erosion Control, Sedimentation Control, and Soil Stabilization Measures 4. Waste Management and Material Control Measures 5. In-Water Placement of Materials, Structures, and Operation of Equipment 6. Stream-Crossing, Culvert, and Bridge Projects 7. Groundwater Protection Measures 8. Drainage and Flood Protection Measures 9. Construction GEO Mitigation Measures: Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) and Septic System Management Measures (CMM-GEO-a–e: 6) 10. Construction BIO Mitigation Measures (CMM-BIO-a–f) 11. Construction HAZ Mitigation Measures: Herbicide and Pesticide Use (CMM-HAZ-a–h: 4), Installation and Operation of Underground and Aboveground Storage Tanks (CMM-HAZ-a–h: 15), and Installation and Maintenance of Plumbing in Public Restrooms (CMM-HAZ-a–h: 16) **B. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies** **C. Project Siting and Design of Habitat Restoration and Other Ecosystem Projects**

Impact	Impact Conclusions	Proposed Mitigation
Impact WQ-i: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam **Impact WQ-j:** Inundation by seiche, tsunami, or mudflow	Blasting, saw-cutting, and hydraulic hammering could release concrete and other particles into surface waters, which could violate water quality standards and/or affect aquatic resources Construction activities may lower local groundwater through dewatering; dewatered groundwater of poor quality could increase turbidity, dissolved solids, nutrients, metals, or other constituents if discharged to a surface waterway Construction could substantially alter drainage patterns of a project site and thereby cause erosion, siltation, or flooding on site or off site Construction activities could change the on-site land slopes across which drainage flows, which could alter the flow rates, directions, water surface elevations, or velocities of runoff that enters or originates on the construction site Activities such as grading, vegetation removal, soil compacting, and paving could increase land surface imperviousness and affect water quality by creating surfaces where pollutants (e.g., petroleum products from vehicles) can accumulate and later be washed into waterways Project sites may be located within a 100-year flood hazard area or in areas subject to inundation by seiche, tsunami, or mudflow	**D. Waste Discharge Requirements**
	Physical Habitat Restoration Geomorphic changes from habitat restoration could increase long-term rates of erosion or sedimentation Placement of fill and gravel has the	**E. Physical Habitat Restoration WQ Mitigation Measures** 1. Restoration Strategy 2. Adaptive Management 3. Levee Protection

Impact	Impact Conclusions	Proposed Mitigation
	potential to release turbidity and existing contaminants from in-channel sediment into the water column Increased turbidity and release of contaminants from gravel mining in or near streams Habitat restoration projects could alter the existing drainage pattern of the site or area and, if improperly designed, alter hydrology and/or increase erosion and sedimentation Possible exceedance of sediment and turbidity objectives from large-scale restoration projects Operation of habitat restoration projects (i.e., tidal, floodplain, riparian) could direct water through restoration areas with contaminated soils and organic material Altered salinity from tidal restoration Formation of harmful algal blooms from algae produced at restoration project sites Mobilized potentially contaminated sediment from dredging activities Potential to increase methylmercury formation or temperature effects from increased floodplain inundation	4. Dredging Plan 5. Minimize Impacts on Infrastructure 6. Contaminant Evaluation 7. Monitor Groundwater Levels 8. Gravel Augmentation WQ Mitigation Measures 9. Harmful Algal Bloom Mitigation 10. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies (7.21 MM-WQ-a–j: B) 11. Project Siting and Design of Habitat Restoration and Other Ecosystem Projects (7.21 MM-WQ-a–j: C) 12. Waste Discharge Requirements (7.21 MM-WQ-a–j: D)
	Fish Passage Improvements Fishways aligned in a straight line without bends have high velocities down the center at moderate to high flows, which can cause erosion downstream of the fishway if the channel is narrow or if the fishway is aligned toward a bank TCDs could change the distribution of water temperature in reservoirs and dissolved oxygen concentration of water	**F. Fish Passage WQ Mitigation Measures** 1. Consultation with Fish and Wildlife Agencies 2. Fish Passage BIO Mitigation Measures (7.21 MM-BIO-a–f: D) 3. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies (7.21 MM-WQ-a–j: B) 4. Project Siting and Design of Habitat Restoration and other Ecosystem Projects (7.21 MM-WQ-a–j: C)

Impact	Impact Conclusions	Proposed Mitigation
	discharged downstream Increased sediment, contaminants (e.g., PCBs, chlorinated pesticides, mercury), erosion, turbidity, and reduction in dissolved oxygen levels downstream from dam removal Decrease of groundwater levels and a corresponding decrease in production rates in some existing wells from dam removal Changes to the downstream channel geometry, reduction of conveyance capacity, or destabilized infrastructure after increase in deposition and erosion from dam removal Substantial increase in flood flows and release of sediments from dam removal Short-term increase flooding from reservoir drawdown and dam removal Long-term changes in water quality from removal of a barrier An increase in the 100-year floodplain from removal of a large dam or reservoir	5. Waste Discharge Requirements (7.21 MM-WQ-a–j: D) **G. Dam Removal WQ Mitigation Measures** 1. Project Planning 2. Regulatory Compliance 3. Sediment Management and Monitoring Plan 4. Revegetation Plan 5. Dam Removal BIO Mitigation Measures (7.21 MM-BIO-a–f: E) 6. Dam Removal HAZ Mitigation Measures (7.21 MM-HAZ-a–h: D) 7. Dam Removal GEO Mitigation Measures (7.21 MM-GEO-a–e: C) 8. Control Concrete Dust (7.21 MM-AQ-a–e: C1) 9. Flood Control Measures 10. Performance Monitoring and Adaptive Management 11. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies (7.21 MM-WQ-a–j: B) 12. Project Siting and Design of Habitat Restoration and other Ecosystem Projects (7.21 MM-WQ-a–j: C) 13. Waste Discharge Requirements (7.21 MM-WQ-a–j: D)
	Invasive Aquatic Vegetation Control Disturbance of channel substrate, increase in surface water turbidity, and low dissolved oxygen from mechanical plant removal Direct water quality effects from use of herbicides	**H. Invasive Aquatic Vegetation Control WQ Mitigation Measures** 1. Reduce Dead Vegetation in Channel 2. Limit Herbicide Use in Water

Impact	Impact Conclusions	Proposed Mitigation
	Less than Significant	
	Predatory Fish Control Substrate disturbance from direct predatory fish removal methods (e.g., setting up/retrieving nets or traps)	—
	Beneficial	
	Physical Habitat Restoration Physical habitat restoration projects would provide increased quality and availability of native habitat (e.g., floodplain habitat) that, in combination with a more natural flow regime, would be expected to benefit native species and ecosystems Riparian and floodplain restoration projects could increase groundwater recharge Restoration projects that support native vegetation benefits water quality by filtering and retaining sediment, nutrients, and some pollutants Increased riparian vegetation, particularly riparian trees, provide shade that can reduce water temperature Large restoration projects could provide additional flood storage space and reduce flood stage in the main waterway	—
	Fish Passage Improvements New or improved fish screens would reduce impingement and entrainment at diversions Fishways would improve passage conditions for adult Chinook salmon and steelhead and provide greater access to upstream habitat TCDs would be expected to support cooler temperatures downstream of dams and	

Impact	Impact Conclusions	Proposed Mitigation
	thereby create migration, spawning, and rearing conditions beneficial for Chinook salmon and steelhead and other native cold water species Dam removal projects would be expected to benefit anadromous salmonids by restoring access to historical habitat that is currently blocked by impassible dams	
	Invasive Aquatic Vegetation Control Invasive aquatic vegetation control efforts can benefit water quality by removing hyacinth and Brazilian waterweed, which clog waterways, increase sedimentation, reduce turbidity, and create low dissolved oxygen conditions	
LAND USE AND PLANNING		
Impact LU-a: Physically divide an established community **Impact LU-b:** Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect **Impact LU-c:** Conflict with any applicable habitat conservation plan or natural community conservation plan	**Potentially Significant**	
	Common Construction [a] Temporary effects on existing land uses from activities such as ground clearing, increased traffic, noise, dust, and human activity, as well as by changes in the visual landscape Construction may temporarily physically divide an established community primarily by cutting off access to roadways or bridges Siting permanent facilities within an established community (e.g., distribution pipelines and other infrastructure) could create physical barriers that could divide the community Siting and construction could result in a permanent change in land use that could conflict with land use plans, policies, or regulations, depending on the location, configuration, and magnitude of the project	**7.21 MM-LU-a,b: Mitigate land use impacts** **A. Construction LU Mitigation Measures (CMM-LU-a–c)** 1. Regulatory Compliance 2. Project Siting and Design 3. Traffic Management Plan (CMM-TRA-a,b,d–f: 3)

Impact	Impact Conclusions	Proposed Mitigation
	Physical Habitat Restoration Projects could include actions, such as levee breaching and road removal, that could isolate communities from services and markets or cut off access to properties Some habitat restoration projects could be incompatible with land use designations, such as plans with exclusive agricultural designations	**B. Physical Habitat Restoration LU Mitigation Measures** 1. Project Siting and Design 2. Develop New Habitat on Public Lands 3. Compensate for Loss or Reduction in Environmental Value
	Fish Passage Improvements Removal of dams could physically divide communities; new land use and zoning designations may need to be determined for areas previously inundated by the reservoirs	**C. Dam Removal LU Mitigation Measures** 1. Feasibility Study 2. Minimize Community Disruption Due to Hauling/Disposing of Construction Waste 3. Dam Removal TRA Mitigation Measures (7.21 MM-TRA-a,b,d–f: C) 4. Dam Removal REC Mitigation Measures (7.21 MM-REC-a,b: C)
MINERAL RESOURCES		
Impact MIN-a: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state **Impact MIN-b:** Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan	**Potentially Significant**	
	Common Construction [a] Construction activities could occur in areas with active natural gas, oil, or aggregate production or with the potential to contain untapped reserves of those resources and restrict access Construction demand for aggregate and/or cement for construction projects could exceed local supplies	**7.21 MM-MIN-a,b: Mitigate impacts on mineral resources** **A. Construction MIN Mitigation Measures (CMM-MIN-a,b)** 1. Project Siting and Design 2. Aggregate Use 3. Access to Extraction Sites 4. Implement the California Department of Conservation's Geologic Energy Management Division's (CalGEM) Recommendations

Impact	Impact Conclusions	Proposed Mitigation
	Less than Significant	
	Physical Habitat Restoration Depletion of mineral resources (specifically aggregate) from gravel augmentation would not be substantial	—
NOISE		
Impact NOI-a: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies **Impact NOI-b:** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels **Impact NOI-d:** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project **Impact NOI-e:** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels **Impact NOI-f:** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels	**Potentially Significant**	
	Common Construction [a] Construction would result in temporary noise and groundborne vibration from the use of heavy construction equipment (e.g., excavators, bulldozers, pile drivers, jackhammers), drilling, and blasting Noise-sensitive receptors may be exposed to noise levels in excess of established standards or to a substantial increase in ambient noise Project sites may be located near a public or private airport or airstrip and temporarily expose construction crew to excessive noise levels	**7.21 MM-NOI-a,b,d–f: Mitigate noise and vibration impacts** **A. Construction NOI Mitigation Measures (CMM-NOI-a,b,d–f)** 1. Regulatory Compliance 2. Noise-Reduction Measures 3. Vibration-Reduction Measures 4. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) 5. Construction near Airports (CMM-HAZ-a-h: 8)
	Less than Significant	
	Predatory Fish Control Nets or other entrapment devices set up or use of boats for capture by fish trawl nets	—
	Invasive Aquatic Vegetation Control Mechanical harvester or herbicide application by aircraft would be intermittent and of short duration	—
Impact NOI-c: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project	**Less than Significant**	
	Physical Habitat Restoration and Other Ecosystem Projects Long-term operation and maintenance may include occasional repair activities and	—

Impact	Impact Conclusions	Proposed Mitigation
	vehicular trips for periodic inspections, monitoring, and evaluation, which would not create or expose people to an excessive or substantial permanent increase in noise or vibration	
POPULATION AND HOUSING		
Impact POP-a: Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) **Impact POP-b:** Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere **Impact POP-c:** Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere	**No Impact**	
	Physical Habitat Restoration and Other Ecosystem Projects Habitat restoration and other ecosystem projects would not involve construction of new homes or businesses, extension of roads, other infrastructure, or other actions that may directly or indirectly induce substantial population growth in an area	—
PUBLIC SERVICES		
Impact PS-a: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities	**Less than Significant**	
	Physical habitat restoration and other ecosystem projects facilities would not result in increases in housing or in population and therefore would not create a need for additional schools, parks, or other public facilities Construction activities could result in temporary, short-term increased response times for fire, police, and other emergency responders due to increased construction traffic and potential road closures and detours Construction activities could result in temporary increases in the number of fire, police, or emergency medical provider service calls in the vicinity of work sites related to emergencies related to	—

Impact	Impact Conclusions	Proposed Mitigation
	construction; but calls are not expected to be large enough or frequent enough to affect response times beyond the regular variation experienced by providers of emergency services	
RECREATION		
Impact REC-a: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated **Impact REC-b:** Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment	**Potentially Significant**	
	Common Construction [a] Recreationists could be affected by construction-related traffic, visual impacts, water quality effects, noise, fugitive dust, and exhaust emissions from heavy equipment; restricted access to recreational facilities could result in physical deterioration of alternative locations and facilities	**7.21 MM-REC-a,b: Mitigate impacts on recreation** **A. Construction REC Mitigation Measures (CMM-REC-a,b)** 1. Project Siting and Design 2. Maintain Access to Existing Recreational Facilities during Construction 3. Coordinate with Public and Private Recreation Providers 4. Rehabilitate or Restore Degraded Recreational Facilities or Provide Replacement Recreational Facilities 5. Construction AES Mitigation Measures (CMM-AES-a-d) 6. Construction AQ Mitigation Measures (CMM-AQ-a-e) 7. Construction WQ Mitigation Measures (CMM-WQ-a-j) 8. Construction NOI Mitigation Measures (CMM-NOI-a,b,d-f) 9. Construction TRA Mitigation Measures (CMM-TRA-a,b,d-f)
	Physical Habitat Restoration Habitat restoration projects that require levee breaching, construction of setback levees, and floodplain expansion could adversely affect marinas and other land-based recreational facilities and	**B. Physical Habitat Restoration REC Mitigation Measures** 1. Project Siting and Design 2. Compensation for Unavoidable Long-Term Impacts

Impact	Impact Conclusions	Proposed Mitigation
	infrastructure Permanent removal of marinas and other recreation facilities and infrastructure could displace recreationists to other locations	
	Fish Passage Improvements Dam removal projects could result in the long-term loss of existing opportunities for reservoir-based recreation activities and could affect flow-dependent activities such as whitewater rafting in river reaches downstream of a reservoir's removal location Dam removal projects could displace recreationists to other locations	**C. Dam Removal REC Mitigation Measures** 1. Project Planning 2. Coordination with Public Recreation Providers 3. Compensate for Impacts on Recreational Facilities
	Less than Significant	
	Fish Passage Improvements Increases in turbidity during reservoir drawdown and sediment flushing periods could temporarily reduce visibility for boaters, swimmers, and fisherpersons The placement of certain types of TCDs (e.g., a thermal curtain) in a reservoir could result in a reduction in reservoir area that would otherwise be available for recreational users	—
	Predatory Fish Control Removal of recreational and sport fish from rivers could result in a reduction in recreational and sport fishing opportunities Removal or modification of structures that provide types of recreational opportunities, such as a small, abandoned dam that creates a swimming hole, could displace recreationists to other areas suitable for	—

Impact	Impact Conclusions	Proposed Mitigation
	swimming	
	Beneficial	
	Physical Habitat Restoration Habitat restoration projects would generally be expected to improve conditions for native fish, resulting in improved fishing opportunities for native species Floodplain restoration projects could provide improved habitat for both wetland and upland game species, which would provide improved hunting and birdwatching opportunities for recreationists Riparian restoration and enhanced in-channel complexity projects could provide improved canoeing and kayaking opportunities by creating a more natural, varied, and dynamic riverine setting in some locations. Large restoration projects could include interpretive facilities or signage related to the ecological history and restoration of the site, which would enhance the recreational experience in the long term Removal of thick aquatic vegetation may allow increased boat access to areas that previously were not accessible	—
TRANSPORTATION AND TRAFFIC		
Impact TRA-a: Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to	**Potentially Significant**	
	Common Construction [a] Construction activities could result in temporary and short-term increases in traffic due to additional vehicles (e.g., construction vehicles, construction workers' personal vehicles) on roads near	**7.21 MM-TRA-a,b,d–f: Mitigate transportation impacts** **A. Construction TRA Mitigation Measures (CMM-TRA-a,b,d–f)** 1. Regulatory Compliance 2. Avoid and Minimize Interference with

Impact	Impact Conclusions	Proposed Mitigation
intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit **Impact TRA-b:** Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways **Impact TRA-d:** Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) **Impact TRA-e:** Result in inadequate emergency access **Impact TRA-f:** Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities	project sites and relocating roads, which would cause new rerouted traffic at an intersection not designed to accommodate additional traffic Construction activities may result in degradation of roads from haul trucks or trips required for fill transport Temporary relocation, closure, or complete removal of existing bicycle and pedestrian paths and trails could occur during construction Projects requiring in-channel construction activities could temporarily obstruct boat navigation and cause boat traffic delays; construction equipment, such as dredges and cofferdams, could temporarily obstruct boat traffic Construction projects may result in roads being temporary blocked, rerouted, or altered, which could affect emergency access Permanent relocation of road segments could require changes that could increase or introduce a hazard to vehicles traveling on that segment	Transportation Networks 3. Traffic Management Plan 4. Restore Damaged Transportation Facilities 5. Waterway Traffic Control Plan 6. Road and Bridge Design
	Physical Habitat Restoration Larger habitat restoration projects, including floodplain restoration, could result in inundation of roads that could impede use and cause traffic congestion at intersections or on certain roadway segments	**B. Physical Habitat Restoration TRA Mitigation Measures** 1. Roadway Detour Plan 2. Protection of Rail Lines
	Fish Passage Improvements Construction-related traffic from dam removal projects may affect local residential and recreational traffic; existing transportation infrastructure (e.g.,	**C. Dam Removal TRA Mitigation Measures** 1. Project Planning 2. Road Design 3. Dam Removal WQ Mitigation Measures,

Impact	Impact Conclusions	Proposed Mitigation
	roadways, bridges, culverts) en route to the dam sites may require improvements over their current conditions Removal of dams that provide river crossings may require construction of a new bridge to meet local traffic demands upon its removal	including incorporation of any special accommodations for road infrastructure into engineering designs (7.21 MM-WQ-a–j: G1) 4. Dam Removal LU Mitigation Measures, including the consideration of transportation in feasibility studies on existing and future land use designations once the dam is removed (7.21 MM-LU-a,b: C1) 5. Dam Removal REC Mitigation Measures, including the consideration of transportation impacts and needs associated with recreation facilities (7.21 MM-REC-a,b: C)
	Less than Significant	
	Invasive Aquatic Vegetation Control Invasive aquatic vegetation would result in a few limited additional vehicle trips associated with a relatively small number of workers commuting to sites Neither chemical nor mechanical invasive aquatic vegetation control would substantially increase transportation hazards or result in inadequate emergency access	—
Impact TRA-c: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks	**No Impact**	
	Physical Habitat Restoration and Other Ecosystem Projects Habitat restoration and other ecosystem projects would not result in a change in air traffic patterns because no airport facilities are proposed, and there would be no increase in demand for air travel as a result of implementing these types of projects	—

Impact	Impact Conclusions	Proposed Mitigation
UTILITIES AND SERVICE SYSTEMS		
Impact UT-a: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board **Impact UT-f:** Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs **Impact UT-g:** Comply with federal, state, and local statutes and regulations related to solid waste	**Potentially Significant**	
	Common Construction [a] Construction sites could generate stormwater runoff that discharges sediment and other pollutants Wastewater from construction could include wastewater from sanitation facilities used by construction crews or wastewater generated directly from construction-related activities Construction activities require water supply for construction workers on site, manufacture and curing of concrete and mortar, testing for waterproofing, cleaning, dust control, and other activities Construction of facilities could temporarily increase the volume of solid waste (e.g., soil, vegetative material, construction debris) disposed of at landfills Construction activities could temporarily disrupt existing electric and natural gas utilities and telecommunication lines and damage utility poles or snag suspended utility lines	**7.21 MM-UT-a,f,g: Mitigate impacts on utilities and service systems** **A. Construction UT Mitigation Measures (CMM-UT-a,f,g)** 1. Wastewater Control Measures 2. Water Supply 3. Nonhazardous Solid Waste Disposal 4. Utility Services
	Fish Passage Improvements Dam removal projects could affect public utilities if water pipelines or electrical transmission lines cross the dam or reservoir or by the loss of a source of hydroelectric power Dam removal would generate substantial volumes of solid waste, including excavated material and demolition debris (e.g., concrete, treated wood, other waste), that would require landfill disposal	**B. Dam Removal UT Mitigation Measures** 1. Feasibility Study 2. Dam Removal WQ Mitigation Measures (7.21 MM-WQ-a–j: G) 3. Solid Waste Disposal

Impact	Impact Conclusions	Proposed Mitigation
Impact UT-b: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects **Impact UT-c:** Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects **Impact UT-d:** Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed **Impact UT-e:** Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments	**Less than Significant**	
	Physical Habitat Restoration and Other Ecosystem Projects Physical habitat restoration and other ecosystem projects would not require the construction of new or expanded wastewater treatment facilities or result in the determination of a wastewater treatment provider that there is inadequate capacity to serve the projects because these projects would not discharge wastewater Physical habitat restoration and other ecosystem projects would not require construction of new storm water drainage facilities or expansion of existing facilities Some habitat restoration projects could initially require a water supply for newly planted vegetation once construction is completed or for temporary irrigation needs in dry years until vegetation is sufficiently established	—

† Table 1-2 is the same Impact and Mitigation Measure Summary Table presented in Section 13.7.22, *Impact Summary* (see Table 13.7.22-2).

[a] Predatory fish control using capture methods and invasive aquatic vegetation control do not involve construction and therefore would not result in potentially significant impacts from construction.

BMP = best management practices; CALGEM = California Department of Conservation's Geologic Energy Management Division; CDFW = California Department of Fish and Wildlife; GHG = greenhouse gas; HCP = habitat conservation plan; NCCP = natural community conservation plan; NMFS = National Marine Fisheries Service; PCBs = polychlorinated biphenyls; TCD = temperature control device.

Table 1-3. Impact and Mitigation Measure Summary—New or Modified Facilities †

Impact	Impact Conclusions	Proposed Mitigation
AESTHETICS		
Impact AES-a: Have a substantial adverse effect on a scenic vista **Impact AES-b:** Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway **Impact AES-c:** Substantially degrade the existing visual character or quality of the site and its surroundings **Impact AES-d:** Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	**Potentially Significant**	
	Common Construction Construction may physically damage scenic resources, introduce large construction equipment, remove vegetation, stockpile materials, create dust, or add new sources of lighting and glare Permanent installation of artificial elements (e.g., riprap), solar panels, and/or security and safety lighting	**7.22 MM-AES-a–d: Mitigate impacts on visual resources** **A. Construction AES Mitigation Measures (CMM-AES-a–d):** 1. Project Siting and Design 2. Screen Construction Areas 3. Spoil Disposal Areas 4. Dust Control Measures (CMM-AQ-a–e: 3) 5. Waste Management and Material Control Measures (CMM-WQ-a–j: 4) 6. Light and Glare Minimization 7. Construction BIO Mitigation Measures: Avoid Vegetation Disturbance (CMM-BIO-a–f: 9), Revegetation Plan (CMM-BIO-a–f: 11) and Revegetation Monitoring and Reporting (CMM-BIO-a–f: 12)
	Reservoirs and Points of Diversion On-stream reservoirs could flood land and convert natural river canyon scenery to lacustrine scenery affecting a scenic vista, damaging scenic resources, or degrading the visual character or quality of the site Flooding farmland or other land cover types could affect a scenic vista, damage scenic resources, or degrade the visual character or quality of the site Introducing new permanent facilities (e.g., pump houses, spillways, power generation facilities), installation of artificial elements (e.g., riprap), buildings and other structures (e.g., transmission lines), and roads could affect scenic and visual quality	**B. Reservoirs and Points of Diversion AES Mitigation Measures** 1. Project Planning 2. Project Siting 3. Project Design

Impact	Impact Conclusions	Proposed Mitigation
	Groundwater Wells and Groundwater Storage and Recovery Well siting could change the visual quality or character of an urban or suburban area and introduce new sources of light or glare	**A. Construction AES Mitigation Measures (CMM-AES-a–d)** **C. Water Treatment Facilities AES Mitigation Measures** 1. Project Siting (7.22 MM-AES-a–d: C2) 2. Project Design (7.22 MM-AES-a–d: C3)
	Water Treatment Facilities Introducing new or expanded built facilities (e.g., large buildings, water conveyance infrastructure) to an area could affect the existing visual character and quality	**C. Water Treatment Facilities AES Mitigation Measures** 1. Project Planning 2. Project Siting 3. Project Design
	Other Construction Projects Canal lining or encasement projects could result in permanent landscape-level changes to the visual environment	**A. Construction AES Mitigation Measures (CMM-AES-a–d)**
	Less than Significant	
	Water Treatment Facilities Modified water treatment facilities, including water recycling treatment plants, would be less likely to have long-term impacts on the visual character or quality of an area because these facilities would be located adjacent to existing infrastructure and/or within or adjacent to existing facilities	—
AGRICULTURE AND FOREST RESOURCES		
Impact AG-a: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use **Impact AG-b:** Conflict with existing zoning for agricultural use or conflict with a Williamson Act	**Potentially Significant**	
	Common Construction Construction activities could remove vegetation and/or topsoil; introduce invasive weeds; restrict access to or interfere with use of agricultural land; disturb utilities and infrastructure serving agriculture; and disturb soil in	**7.22 MM-AG-a–e: Mitigate impacts related to agriculture and forest resources** **A. Construction AG Mitigation Measures (CMM-AG-a–e)** 1. Project Siting and Design 2. Invasive Species Control Measures 3. Post-Construction Best Management

Impact	Impact Conclusions	Proposed Mitigation
contract **Impact AG-c:** Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)) **Impact AG-d:** Result in the loss of forest land or conversion of forest land to non-forest use **Impact AG-e:** Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use	development footprints, borrow/spoils areas, or staging areas (e.g., soil compaction resulting from heavy equipment storage or soil stockpiling) Agricultural or forested areas cleared for buildings and other facilities (e.g., power supply facilities), roads, and other project features could result in direct permanent conversion of important farmland, conflict with agricultural zoning or Williamson Act-contracted land, result in loss or conversion of forest land, or conflict with existing zoning for forest land or timberland	Practices 4. Protect Agricultural Soils 5. Agricultural Mitigation Consistent with County and Local Jurisdiction Requirements 6. Avoid or Minimize Impacts on Forest and Timberland
	Reservoirs and Points of Diversion Filling a new reservoir or expanding an existing reservoir footprint could permanently convert important farmland or forest land, conflict with agricultural zoning or Williamson Act-contracted land, or conflict with existing zoning for forest land or timberland land if the reservoir was sited in whole or part on these land types	**A. Construction AG Mitigation Measures (CMM-AG-a–e)**
	Beneficial	
	New or Modified Facilities Reservoirs and points of diversion, groundwater wells, groundwater storage and recovery projects, and water treatment facilities could support the continued use of agricultural land by supplying irrigation water, and to make water delivery more accessible and efficient	—

Impact	Impact Conclusions	Proposed Mitigation
AIR QUALITY		
Impact AQ-a: Conflict with or obstruct implementation of the applicable air quality plan **Impact AQ-b:** Violate any air quality standard or contribute substantially to an existing or projected air quality violation **Impact AQ-c:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) **Impact AQ-d**: Expose sensitive receptors to substantial pollutant concentrations **Impact AQ-e:** Create objectionable odors affecting a substantial number of people	**Potentially Significant**	
	Common Construction Construction activities could generate fugitive dust and emissions from fuel combustion of heavy construction equipment and vehicles Inadvertent dispersal of *Coccidioides* spores (responsible for Valley Fever) and asbestos into the environment	**7.22 MM-AQ-a–e: Mitigate impacts on air quality** **A. Construction AQ Mitigation Measures (CMM-AQ- a–e)** 1. Regulatory Compliance 2. Emissions Reductions Measures 3. Dust Control Measures 4. Valley Fever Control Measures 5. Asbestos Control Measures 6. Health Risk Assessment 7. Minimize Construction-Related Traffic and Equipment Use 8. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) for fugitive dust control
	Reservoirs and Points of Diversion Substantial particulate emissions from use of heavy construction equipment and vehicles, blasting activities, and from removal of soil spoils Operation of recreational facilities associated with the new reservoir could result in generation of emissions from vehicle trips and motorized recreational vehicles (e.g., boats and jet skis)	**B. Reservoirs and Points of Diversion AQ Mitigation Measures** 1. Site-Specific Dust Control Plan 2. Recreational Boat Emissions Minimization Plan 3. Offset Criteria Pollutant Emissions Generated from Recreational Boating
	Water Treatment Facilities Operation of new wastewater treatment plants could result in new source of odors	**C. Water Treatment Facilities AQ Mitigation Measures** 1. Regulatory Compliance (7.22 MM-WQ-a–j: D1) 2. Odor Management Plan

Impact	Impact Conclusions	Proposed Mitigation
	Less than Significant	
	Reservoirs and Points of Diversion Odors produced by harmful algal blooms (HABs) in new reservoirs	—
	Water Treatment Facilities Operation of desalination facilities would likely be powered by energy efficient and low-cost power sources and not generate significant power-generation emissions	—
BIOLOGICAL RESOURCES		
Impact BIO-a: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact BIO-b:** Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service **Impact BIO-c:** Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrolgical interruption, or other means **Impact BIO-d:** Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites **Impact BIO-e:** Conflict with any local policies or	**Potentially Significant**	
	Common Construction Construction projects could be located in a sensitive natural community, habitat for special-status species, wetlands, wildlife corridors, or waterways Direct or indirect harm (including mortality) to special-status species and associated habitat from movement of heavy machinery where such species occur Disturbance of special-status species through construction noise, physical vibration, and direct removal of structures that provide habitat Introduction or spread of invasive vegetative species through the movement of topsoil, fill, gravel, and construction equipment Removal of riparian vegetation and disturbance to wetlands to facilitate heavy equipment movement and other construction activities Release of sediment and possibly hazardous materials (e.g., oil or gas from construction equipment) into waterbodies	**7.22 MM-BIO a–f: Mitigate impacts on biological resources** **A. Construction BIO Mitigation Measures (CMM-BIO-a–f)** 1. Regulatory Compliance 2. Preconstruction Surveys 3. Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities 4. Avoid, Minimize, or Compensate for Impacts on Special-Status Species 5. Environmental Awareness Training 6. Incorporate Protection Measures for In-Water Construction 7. Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species during Construction 8. Invasive Species Control Measures 9. Avoid Vegetation Disturbance 10. Staging Areas 11. Revegetation Plan 12. Revegetation Monitoring and Reporting

Impact	Impact Conclusions	Proposed Mitigation
ordinances protecting biological resources, such as a tree preservation policy or ordinance **Impact BIO-f:** Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	from construction on or near waterways Creation of noise and vibration that could harm fish from activities such as pile driving, blasting, or use of other construction equipment Release of concrete particles from blasting to surface waters could disturb terrestrial wildlife and harm fish Take of special-status fish species could result from construction and installation of cofferdams (resulting in fish stranding) or fish rescue in a dewatered area (seining, electrofishing) Some construction projects may conflict with adopted habitat conservation plans (HCPs) or natural community conservation plans (NCCPs)	13. Compliance with HCPs and NCCPs 14. Construction WQ Mitigation Measures (CMM-WQ-a–j) 15. Avoid or Minimize Lighting and Glare Effects 16. Dust Control Measures (CMM-AQ-a–e: 3) 17. Construction NOI Mitigation Measures: Noise Reduction Measures (CMM-NOI-a,b,d-f: 2) and Vibration-Reduction Measures (CMM-NOI-a,b,d-f: 3) 18. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7)
	Reservoirs and Points of Diversion Operation of reservoirs and points of diversion could affect biological resources depending on the source of the water and how much flow is diverted from the stream system Reservoir footprint inundation of a large new reservoir could result in permanent loss of thousands of acres of wildlife habitat, including sensitive natural communities New on-stream reservoirs would replace existing riverine habitats with aquatic lake habitat through flooding Loss of riparian trees and related habitat could affect multiple candidate, sensitive, and special-status species Reservoir and points of diversion projects could negatively affect biological resources	**B. Reservoirs and Points of Diversion BIO Mitigation Measures** 1. Regulatory Compliance 2. Project Planning and Design 3. Reservoirs and Points of Diversion WQ Mitigation Measures (7.22 MM-WQ-a-j: B) 4. Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species 5. Dredging Plan 6. Minimize Intake Impacts on Fish 7. Compensate for Impacts on Special-Status Species and Habitat 8. Recreation Management Plan 9. Environmental Awareness Training 10. Reduce Bird Collisions with Overhead Power Lines 11. Maintenance Activities: Construction BIO

Impact	Impact Conclusions	Proposed Mitigation
	by altering the timing and magnitude of flows and downstream water temperature Reservoir and points of diversion projects could eliminate important geomorphic processes and floodplain inundation, decrease habitat connectivity, alter hydrodynamics, and alter scour and deposition Flow changes to the Delta could alter temperature and salinity gradients in the Delta Dredging could result in direct physical injury to aquatic species, including special-status species if present, and could temporarily disrupt the movement of local and migratory fish species through increased turbidity Candidate, sensitive, and special-status species; their habitat; and sensitive natural communities could be affected in areas where dredged material is deposited Projects could interfere with movement of native resident or migratory fish Impingement and entrainment could occur at surface water diversions Invasive aquatic species could be established and spread; and habitat for species that prey on, compete with, or displace special-status species could be inadvertently created Recreation activities associated with reservoirs could disrupt wildlife movement patterns Power transmission lines could adversely affect migratory and non-migratory birds Temporary in-water activities that may be required for facility repairs or	Mitigation Measures (CMM-BIO-a–f) and Herbicide and Pesticide Use (CMM-HAZ-a–h: 4)

Impact	Impact Conclusions	Proposed Mitigation
	maintenance, although limited in duration, could result in injury or mortality of special-status fish and wildlife species and habitat disturbance	
	Water Treatment Facilities Operation of surface water treatment facilities could affect biological resources depending on the source of the water and how much is used Operation of intakes for surface water treatment facilities may result in impingement or entrainment of special-status fish and aquatic species and may create conditions conducive to predation Desalination plant discharge-related effects on aquatic species could occur from exposure to toxic concentrations of brine Brine waste discharge may result in marine life mortality as a result of creating hypoxic or anoxic conditions or shearing stress from turbulent mixing Seawater desalination would remove benthic ecosystems on the ocean floor during excavation Power transmission lines could adversely affect migratory and non-migratory birds	**C. Water Treatment Facilities BIO Mitigation Measures** 1. Reservoirs and Points of Diversion BIO Mitigation Measures (7.22 MM-BIO-a-f: B) 2. Water Treatment Facilities WQ Mitigation Measures (7.22 MM-WQ-a–j: D) 3. Desalination Facilities BIO Mitigation Measures 4. Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures (7.22 MM-WQ-a-j: C) 5. Reduce Bird Collisions with Overhead Power Lines (7.22 MM-BIO-a–f: B10) 6. Maintenance Activities: Construction BIO Mitigation Measures (CMM-BIO-a–f) and Herbicide and Pesticide Use (CMM-HAZ-a–h: 4)
	Other Construction Projects Create drowning risk to wildlife by lining a canal, which would result in a steeper sideslope and faster flow velocity Conversion of a canal to an aboveground pipeline could interfere with an existing terrestrial migratory corridor Canal lining and encasement could substantially reduce or eliminate water seepage from unlined canals that support	**D. Other Construction Project BIO Mitigation Measures** 1. Wildlife Escape Measures 2. Wildlife Passage at Aboveground Pipelines 3. Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities (CMM-BIO-a–f: 3)

Impact	Impact Conclusions	Proposed Mitigation
	riparian and other adjacent sensitive natural communities or wetland vegetation	
	Less than Significant	
	Reservoirs and Points of Diversion New reservoirs could create mosquito habitat and thus require the use of pesticides	—
	Water Treatment Facilities Use of recycled water could increase incidental irrigation runoff, soil salinity, and saturate soils that may affect adjacent natural habitat and potentially sensitive species and plants	—
	Other Construction Projects Modifying an open irrigation canal to an underground pipeline could result in loss of a drinking water source to wildlife	—
	Beneficial	
	Other Construction Projects Modifying an open irrigation canal to an underground pipeline could remove barriers to wildlife	—
CULTURAL RESOURCES		
Impact CUL-a: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 **Impact CUL-b:** Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5 **Impact CUL-c:** Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature **Impact CUL-d:** Disturb any human remains, including those interred outside of dedicated cemeteries	**Potentially Significant**	
	Common Construction Ground-disturbing activities, including deep excavation, could damage archaeological sites or historic built environment resources or degrade unknown buried or near-surface cultural resources Changes in topography, hydrologic patterns, and soil movement could degrade or otherwise affect near-surface archaeological or built environment	**7.22 MM-CUL-a–d: Mitigate impacts on cultural resources** **A. Construction CUL Mitigation Measures (CMM-CUL-a–d)** 1. Regulatory Compliance 2. Preconstruction Surveys for Historical, Archaeological, and Paleontological Resources; Cultural Landscapes; and Traditional Cultural Properties 3. Cultural Resources Management Plan

Impact	Impact Conclusions	Proposed Mitigation
	resources Construction activities could alter the appearance of a historic resource from dust interacting with an object's surface, which could cause damage or chemical alteration Temporary or permanent visual obstructions from the presence of large-scale equipment, machinery, and vehicles could diminish the integrity of cultural resources Unauthorized removal or vandalism of cultural resources could occur if construction enables access to cultural sites that were not previously known or accessible Access to cultural resources during construction could be reduced and thereby prevent or impair visits to cultural resources by people with a religious or cultural connection to the resource Vegetation clearing, generation of dust, and visual obstructions from the presence of large-scale equipment, machinery, and vehicles could result in impacts on cultural resources that have an associated landscape or other visual component that contributes to their significance, such as a sacred landscape or historic trail Pile driving could cause vibration that could physically damage or alter nearby historic built environment resources or linear features	4. Unanticipated Discovery Measures 5. Oversight and Monitoring of Construction Activities 6. Worker Cultural Resources Sensitivity Training 7. Dust Control Measures (CMM-AQ-a–e: 3) 8. Construction NOI Mitigation Measures: Noise-Reduction Measures (CMM-NOI- a,b,d-f: 2) and Vibration-Reduction Measures (CMM-NOI- a,b,d-f: 3) 9. Construction Site Security (CMM-HAZ-a–h: 7) 10. Construction AES Mitigation Measures: Project Siting and Design (CMM-AES-a–d: 1) and Screen Construction Areas (CMM-AES-a–d: 2)
	Reservoirs and Points of Diversion New and expanded reservoir projects could permanently flood areas with buried or surficial historical, archaeological, or	**B. Reservoirs and Points of Diversion CUL Mitigation Measures** 1. Historic Dams and Structures 2. Project Planning 3. Coordination with General or Resource

Impact	Impact Conclusions	Proposed Mitigation
	paleontological resources; unique geologic features; or human remains Changing water levels could expose previously inundated cultural resources or buried human remains to increased wave action, erosion, and human activity (e.g., looting) A dam raise project could cause a substantial adverse change to a historical resource if the existing dam were recognized as such If archaeological and/or paleontological resources exist in native soils below accumulated sediment in an existing reservoir, dredging (as part of reservoir expansion) could directly adversely affect these cultural resources	Management Plan 4. Monitoring of Dredging
ENERGY AND GREENHOUSE GAS EMISSIONS		
Impact EN-b: Result in inefficient, wasteful, and unnecessary energy consumption **Impact GHG-a:** Generate greenhouse gas emissions, either directly or indirectly **Impact GHG-b:** Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	**Potentially Significant**	
	Common Construction Temporary increase in energy demand from heavy construction equipment (e.g., trucks or barges, earthmoving equipment, and power tools) for actions such as excavating, grading, transporting materials, and transporting construction workers to and from the work sites Generation of GHG emissions from heavy construction equipment, haul trucks, and worker vehicles Construction activities could remove vegetation that acts to sequester GHGs (e.g., trees) GHG emissions from construction could conflict with an applicable GHG plan, policy, or regulation	**7.22 MM-EN-b/GHG-a,b: Mitigate energy and GHG emissions impacts** **A. Construction EN/GHG Mitigation Measures (CMM-EN-b/GHG-a,b)** 1. Regulatory Compliance 2. GHG Emission Reduction Measures 3. Construction AQ Mitigation Measures: Regulatory Compliance (CMM-AQ-a–e: 1), Emission Reduction Measures (CMM-AQ-a–e: 2), and Minimize Construction-Related Traffic and Equipment Use (CMM-AQ-a–e: 7) **B. Regulatory Compliance**

Impact	Impact Conclusions	Proposed Mitigation
	Reservoirs and Points of Diversion Energy use and associated GHG emissions for water diversion and conveyance Vegetation decay, which produces carbon dioxide and methane gases, could occur if vegetation is present in newly inundated areas	**C. Reservoirs and Points of Diversion EN/GHG Mitigation Measures** 1. Regulatory Compliance (7.22 MM-EN-b/GHG-a,b: B) 2. Project Design 3. GHG Reduction Plan 4. Vegetation Removal (7.22 MM-WQ-a–j: B8ii)
	Water Treatment Facilities Energy use and associated generation of GHGs for water treatment GHG emissions from facility operation could conflict with an applicable GHG plan, policy, or regulation	**D. Water Treatment Facilities EN/GHG Mitigation Measures** 1. Regulatory Compliance (7.22 MM-EN-b/GHG-a,b: B) 2. GHG Reduction Plan (7.22 MM-EN-b/GHG-a,b: C3) 3. Project Siting and Design
	Less than Significant	
	Reservoirs and Points of Diversion Power for operating lighting, pumps, valves, gages, and other equipment is modest, and operation of reservoirs could result in generation of hydropower	—
	Water Treatment Facilties Operation of water treatment facilities would not result in inefficient, wasteful, or unnecessary consumption of energy because these facilities would provide reliable potable and nonpotable water to meet existing demand in affected areas	—
Impact EN-a: Adversely affect the reliability of California's electric grid	**Less than Significant**	
	New or Modified Facilities Increased electrical load for new or modified facilities would be small compared to the existing local and statewide electrical demand and because much construction activity is powered	—

Impact	Impact Conclusions	Proposed Mitigation
	directly by fossil fuel and, as such, does not require use of the electric grid	
GEOLOGY AND SOILS		
mpact GEO-a: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides **Impact GEO-b:** Result in substantial soil erosion or the loss of topsoil **Impact GEO-c:** Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse **Impact GEO-e:** Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater I**mpact GEO-d:** Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property **Impact GEO-e:** Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater	**Potentially Significant**	
	Common Construction Construction activities could occur in areas known to have seismic activity, or experience landslides or could be located on expansive soil or on a geologic unit or soil that is unstable or would become unstable due to construction Construction activities could occur in areas underlain by soft or loose soils, where high groundwater or seepage may be present, and on sloping grounds Ground disturbance could expose geologic materials or soil, destabilize the material, and cause soil erosion or loss of topsoil Construction activity that involves blasting could trigger landslides on unstable slopes and expose construction workers or members of the public to the risk of injury or death	**7.22 MM-GEO-a–e: Mitigate geology and soils impacts** **A. Construction GEO Mitigation Measures (CMM-GEO-a–e)** 1. Regulatory Compliance 2. Project Siting and Design 3. Assurance of No Fault Traces 4. Geology and Soils Management Measures 5. Construction WQ Mitigation Measures: Regulatory Compliance (CMM-WQ-a–j: 1) and Erosion Control, Sedimentation Control, and Soil Stabilization Measures (CMM-WQ-a–j: 3) 6. Septic System Management Measures 7. Blasting Operations and Safety Plan 8. Protect Agricultural Soils (CMM-AG-a-e: 4)
	Reservoirs and Points of Diversion Dams, points of diversions, and other constructed facilities located near active faults could be damaged or fail due to seismic-related ground shaking, fault movements, liquefaction, or lateral spreading Formation of surface springs and seeps in adjacent areas due to leakage from operation of a new reservoir could result in unstable soils, landslides, lateral spreading, subsidence, liquefaction, or collapse Points of diversion and other constructed	**B. Reservoirs and Points of Diversion GEO Mitigation Measures** 1. Regulatory Compliance 2. Project Siting and Design for New or Modified Reservoirs 3. Geotechnical Investigations for Dam Foundation and Reservoir Rim 4. Feasibility Studies 5. Sediment Management and Monitoring Plan

Impact	Impact Conclusions	Proposed Mitigation
	facilities (e.g., water conveyance pipelines) located near active faults could be damaged or fail if exposed to surface fault rupture or strong seismic ground shaking Reservoirs can draw people to an area for recreation, thereby exposing them to any geologic hazards	
	Groundwater Wells and Groundwater Storage and Recovery New groundwater wells located in areas with high groundwater levels and cohesionless soils may be subject to effects from liquefaction in a seismic event New groundwater wells could create a shallow water table, making area prone to liquefaction in areas of poorly consolidated geologic materials Potential for substantial erosion and/or loss of top soil if recharge water is applied at too high of a rate or volume	**C. Groundwater Wells and Groundwater Storage and Recovery GEO Mitigation Measures** 1. Project Design for Passive Recharge 2. Regulatory Compliance (7.22 MM-WQ-a–j: C3) for groundwater wells
	Water Treatment Facilities Siting desalination facilities in a seismically active coastal area could expose people or structures to potential adverse geological effects	**D. Water Treatment Facilities GEO Mitigation Measure** 1. Coordination with the California Coastal Commission
HAZARDS AND HAZARDOUS MATERIALS		
Impact HAZ-a: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials **Impact HAZ-b:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions	**Potentially Significant**	
	Common Construction Accidental release of hazardous materials from construction activities requiring the transport, use, or disposal of hazardous materials (e.g., fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding	**7.22 MM-HAZ-a-h: Mitigate hazards and hazardous materials impacts** **A. Construction HAZ Mitigation Measures (CMM-HAZ-a–h)** 1. Measures for Transport, Use, or Disposal of Hazardous Materials

Impact	Impact Conclusions	Proposed Mitigation
involving the release of hazardous materials into the environment **Impact HAZ-c:** Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school **Impact HAZ-d:** Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment **Impact HAZ-e:** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area **Impact HAZ-f:** For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area **Impact HAZ-g:** Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan **Impact HAZ-h:** Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands	flux, paint, paint thinner) Safety hazards could occur from rock thrown and scattered from use of explosives Exposure to or the spread of toxic chemicals from excavation during construction that disturb areas with existing soil or groundwater contamination (i.e., asbestos or lead-based paint from existing building materials or stored liquid paints, solvents, and household or industrial-strength maintenance chemicals and cleaners) Underground infrastructure (e.g., natural gas pipelines, utility lines) within a project area could be encountered during excavation and could result in hazards to the public or environment if damaged Disturbance of soils containing *Coccidioides* spores may expose workers and people adjacent to construction sites to these fungal spores in fugitive dust Accidental hazardous materials spills from airborne materials (e.g., gases, asbestos particles) or through ignition of flammable liquids or vapors during construction activities could occur within 0.25 mile of a school Impairment of emergency response services' access or interfering with emergency evacuation by rerouting traffic during construction and increased need for emergency service providers during construction due to accidental releases of hazardous materials, work site fires, and vehicular accidents due to construction-related changes in traffic	2. Project Siting 3. Demolition Measures 4. Herbicide and Pesticide Use 5. Hazardous Materials and Worksite Safety Training 6. Emergency Response Plan 7. Construction Site Security 8. Construction near Airports 9. Fire Prevention and Management Plan 10. Asbestos Control Measures (CMM-AQ-a–e: 5) 11. Valley Fever Control Measures (CMM-AQ-a–e: 4) 12. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) 13. Septic System Management Measures (CMM-GEO-a–e: 6) 14. Mosquito Control Measures 15. Installation and Operation of Underground and Aboveground Storage Tanks 16. Installation and Maintenance of Plumbing in Public Restrooms **B. Hazardous Materials Storage** **C. Hazardous Materials Accidental Spill Response Plan** **D. Hazardous Materials Training** **E. Wildfire Prevention Plan** 1. Signage 2. Parking Restriction 3. Vegetation Maintenance 4. Fire Fighting Equipment

Impact	Impact Conclusions	Proposed Mitigation
	Wildfire risk from the use of electrical or gas-powered equipment, flammable materials (e.g., fuels, solvents), and/or explosives during construction Safety hazards from project components, such as buildings or construction equipment, that encroach on airspace of airport runways Stagnant water present in construction areas during the wet season could create new disease vector habitat (i.e., mosquito habitat) that require application of pesticides Faulty installation or inadequate operation and maintenance of underground or aboveground storage tanks for bulk fuel storage may result in surface water and groundwater contamination, the potential for fire and explosion, exposure of the public to raw sewage, and daylighting of wastewater at the ground surface	
	Reservoirs and Points of Diversion New or modified reservoir and diversion projects could result in prolonged construction-related impacts involving an increase in traffic on narrow rural roads from commuting workers, hauling of large equipment, and disposal of wastes Once constructed, some projects may require use of hazardous materials for operations and maintenance (e.g., use of petroleum-based lubricants for machinery, solvents and paints, herbicide control of invasive weeds as part of landscape maintenance, pesticide for control of mosquitoes); improper use or storage of herbicides could result in exposure of the	**F. Reservoirs and Points of Diversion HAZ Mitigation Measures** 1. Reservoirs and Points of Diversion WQ Mitigation Measures (7.22 MM-WQ-a-j: B) 2. Handling, Storage and Disposal of Dredged Material (CMM-WQ-a-j: 4vi) 3. Hazardous Material Storage (7.22 MM-HAZ-a-h: B) 4. Hazardous Materials Accidental Spill Response Plan (7.22 MM-HAZ-a-h: C) 5. Hazardous Materials Training (7.22 MM-HAZ-a–h: D) 6. Wildfire Prevention Plan (7.22 MM-HAZ-a-h: E) 7. Air Safety Mitigation

Impact	Impact Conclusions	Proposed Mitigation
	application crews and general public (including children, for sites located within 0.25 mile of a school) to toxic chemicals Dredging could involve removal of contaminated sediment that could accidentally be released to areas and surface waters Release cyanotoxins from harmful algal blooms in new reservoirs Increase in surface water methylmercury due to operation of new reservoirs Reservoirs constructed close to an airport could potentially create a safety hazard for people (e.g., recreationists) by placing them in proximity to hazards associated with airport operations Create conditions favorable to mosquitos, which could lead to increased transmission of mosquito-borne diseases (e.g., West Nile virus) Wildfire risk from the use of vehicles, fire pits and grills, and electrical- or gas-powered maintenance equipment at new reservoirs Potential safety hazards (e.g., aircraft and waterfowl collisions) for air traffic would be associated with new reservoirs located close to an airport Increased potential for transmission of mosquito-borne diseases from the potential creation of mosquito habitat at new and expanded reservoirs and points of diversion	8. Mosquito Control 9. Blasting Operations and Safety Plan (CMM-GEO-a–e: 7)

Impact	Impact Conclusions	Proposed Mitigation
	Groundwater Wells and Groundwater Storage and Recovery Accidental release of hazardous materials during transport and use could be associated with required chemical treatment of water at new groundwater wells Accidental release of hazardous material during transport and disposal of water treatment waste (e.g., used granular activated carbon filters) if water treatment occurs at new groundwater wells Accidental release of hazardous materials during transport and use could occur where diesel-powered pumps are used for groundwater wells Accidental release of hazardous materials during transport and use could occur where water treatment is implemented prior to injection for groundwater storage and recovery Increased potential for transmission of mosquito-borne diseases would result from the potential creation of mosquito habitat in groundwater recharge ponds or spreading basins	**G. Groundwater Wells and Groundwater Storage and Recovery HAZ Mitigation Measure** 1. Mosquito Control (7.22 MM-HAZ-a-h: F8)
	Water Treatment Facilities Accidental release of hazardous materials could occur during transport, use, and storage for facility operation Accidental release of hazardous materials could occur during transport and disposal of hazardous waste (e.g., used granular activated carbon filters, biosolids) from water treatment Wildfire risk from the improper storage or use of flammable/ combustible or	**H. Water Treatment Facilities HAZ Mitigation Measures** 1. Hazardous Materials Business Plan 2. Design of On-Site Access and Service Roads 3. Measures for Transport, Use, or Disposal of Hazardous Materials (CMM-HAZ-a-h: 1) for operation and maintenance 4. Herbicide and Pesticide Use (CMM-HAZ-a-h: 4) for maintenance 5. Hazardous Materials Storage (7.22 MM-

Impact	Impact Conclusions	Proposed Mitigation
	incompatible chemicals for facility operation and use of electrical or gas-powered equipment during maintenance activities Drinking water treatment plants that include groundwater wells could result in impacts described for new groundwater wells	HAZ-a-h: B) 6. Hazardous Materials Accidental Spill Response Plan (7.22 MM-HAZ-a-h: C) 7. Hazardous Materials Training (7.22 MM-HAZ-a-h: D) 8. Wildfire Prevention Plan (7.22 MM-HAZ-a-h: E) 9. Water Treatment Facilities WQ Mitigation Measures (7.22 MM-WQ-a-j: D) 10. Groundwater Storage and Recovery HAZ Mitigation Measure (7.22 MM-HAZ-a–h: G)
	Other Construction Projects Wildfire risk could increase from the use of electrical or gas-powered equipment during maintenance activities and hot vehicle exhaust systems of maintenance vehicles, fuel-powered equipment, and grinding and welding activities, if required Operation of new or modified boat ramps adjacent to wildlands would attract recreationists and could expose them to wildland fires	**I. Other Construction Projects HAZ Mitigation Measure** 1. Wildfire Prevention Plan (7.22 MM-HAZ-a-h: E)
	Less than Significant	
	Reservoirs and Point Diversion A new reservoir could flood a roadway designated in an emergency response plan or evacuation plan	—
HYDROLOGY & WATER QUALITY		
Impact WQ-a: Violate any water quality standards or waste discharge requirements **Impact WQ-b:** Substantially deplete groundwater supplies or interfere substantially with	**Potentially Significant**	
	Common Construction Construction could contribute polluted runoff and sediment to nearby waterbodies	**7.22 MM-WQ-a–j: Mitigate impacts on hydrology and water quality** **A. Construction WQ Mitigation Measures**

Impact	Impact Conclusions	Proposed Mitigation
groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted) **Impact WQ-c:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site **Impact WQ-d:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site **Impact WQ-e:** Create or combine runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff **Impact WQ-f:** Otherwise substantially degrade water quality **Impact WQ-g:** Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map **Impact WQ-h:** Place within a 100-year flood hazard area structures which would impede or redirect flood flows **Impact WQ-i:** Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam **Impact WQ-j:** Inundation by seiche, tsunami, or	In-water construction can cause temporary sediment disturbance and resuspension, which may cause increased turbidity, siltation, and bioavailability of sediment-associated pollutants Accidental release of pollutants that could enter storm drains or streams; pollutants include petroleum products (e.g., fuel, oil, grease from vehicles and equipment), paving materials (e.g., concrete and asphalt), other materials used or stored on site (e.g., paint, adhesives, solvents), and project waste (e.g., litter, debris, hazardous and liquid waste) Use of herbicides to control invasive plant species could affect water quality and violate water quality standards if improperly applied or stored Faulty installation or inadequate operation and maintenance of underground or aboveground storage tanks for bulk fuel storage may result in surface water and groundwater contamination and release of raw sewage, which could affect groundwater and surface water quality Improper siting of septic systems could result in adverse water quality effects Localized degradation of groundwater quality could result from temporary, short-term constructions activities Blasting, saw-cutting, and hydraulic hammering could release concrete and other particles into surface waters, which could violate water quality standards and/or affect aquatic resources Construction activities may lower local groundwater through dewatering;	**(CMM-WQ-a–j)** 1. Regulatory Compliance 2. Project Siting and Design 3. Erosion Control, Sedimentation Control, and Soil Stabilization Measures: 4. Waste Management and Material Control Measures 5. In-Water Placement of Materials, Structures, and Operation of Equipment 6. Stream-Crossing, Culvert, and Bridge Projects 7. Groundwater Protection Measures 8. Drainage and Flood Protection Measures 9. Construction GEO Mitigation Measures: Blasting Operations and Safety Plan (CMM-GEO-a–e: 7) and Septic System Management Measures (CMM-GEO-a–e: 6) 10. Construction BIO Mitigation Measures (CMM-BIO-a-f) 11. Construction HAZ Mitigation Measures: Herbicide and Pesticide Use (CMM-HAZ-a-h: 4); Installation and Operation of Underground and Aboveground Storage Tanks (CMM-HAZ-a–h: 15); and Installation and Maintenance of Plumbing in Public Restrooms (CMM-HAZ-a–h: 16)

Impact	Impact Conclusions	Proposed Mitigation
mudflow	dewatered groundwater of poor quality could increase turbidity, dissolved solids, nutrients, metals, or other constituents if discharged to a surface waterway Construction could substantially alter drainage patterns of a project site and thereby cause erosion, siltation or flooding, on site or off site Construction activities could change the on-site land slopes across which drainage flows, which could alter the flow rates, directions, water surface elevations, or velocities of runoff that enters or originates on the construction site Activities such as grading, vegetation removal, soil compacting, and paving could increase land surface imperviousness and affect water quality by creating surfaces where pollutants (e.g., petroleum products from vehicles) can accumulate and later be washed into waterways Project sites may be located within a 100-year flood hazard area or in areas subject to inundation by seiche, tsunami, or mudflow	
	Reservoirs and Points of Diversion Dams and points of diversion can alter flow regimes and reduce or eliminate important geomorphic processes and floodplain inundation, decrease habitat connectivity, alter temperatures to the detriment of cold water species, and alter salinity gradients and circulation patterns in the Delta Dams and points of diversion reduce stream flows, which could injure water right holders, alter water quality, affect	**B. Reservoirs and Points of Diversion WQ Mitigation Measures** 1. Project Planning 2. Feasibility Studies 3. Regulatory Compliance 4. Reservoir Operations and Management Plan 5. Prevent Impacts on Instream Flows 6. Develop Flood Control Rules 7. National Management Measures to Control Nonpoint Source Pollution from Hydromodification

Impact	Impact Conclusions	Proposed Mitigation
	surface water-groundwater interactions, and reduce groundwater recharge Changes in streamflow could affect instream chemical constituent concentrations due to changes in instream dilution, potentially affecting the ability of a waste discharger or drinking water provider to comply with waste discharge requirements and/or water quality standards Reservoirs create conditions conducive to harmful algal blooms, growth of invasive aquatic vegetation, and methylation of mercury Reservoirs could affect channel erosion, sedimentation, and morphology as a result of long-term changes in the sediment balance Sediment accumulation at the bottom of a reservoir may contribute to anoxic conditions and reduced water quality Capture of sediment behind a dam can reduce the sediment supply to downstream waterways, affecting habitat and altering the balance between erosion and sedimentation Where reservoir expansion occurs through dredging, dredged sediments may contain contaminants (e.g., mercury and other metals, polychlorinated biphenyls, polyaromatic hydrocarbons) in concentrations that may violate water quality standards or otherwise degrade reservoir and downstream water quality if mobilized Dredging may result in the indirect, temporary, and short-term reduction of	8. Methylmercury Management for New Reservoirs 9. Harmful Algal Bloom Management for New Reservoirs 10. Construction Timing for a Dam Raise Project 11. Dredging Plan 12. Project Siting and Design for New or Modified Reservoirs (7.22 MM-GEO-a-e: B2) 13. Geotechnical Investigations for Dam Foundation and Reservoir Rim (7.22 MM-GEO-a-e: B3)

Impact	Impact Conclusions	Proposed Mitigation
	dissolved oxygen in the water column as a result of the suspension of anoxic organic matter in sediment Reservoir construction could result in temporary and permanent changes to drainages, erosion, or runoff due to grading or preparation of land as well as major excavation and blasting for dam foundation preparation Failure of new or modified dams would result in flooding, potentially exposing people or structures to a significant risk of loss, injury, or death Construction of facility pipelines associated with reservoirs and points of diversion through or under levees could compromise levee integrity and cause flooding Points of diversion could cause localized changes in sedimentation and bioavailability of pollutants	
	Groundwater Wells and Groundwater Storage and Recovery Inappropriate siting, design, or construction of groundwater wells could result in groundwater contamination New groundwater wells located where multiple aquifer zones of varying water quality are cross-connected could cause a general degradation of groundwater quality Degradation of surface water and/or groundwater quality could occur from accidental release of water treatment chemicals used at groundwater wells Operation of new urban wells could degrade water quality by drawing in	**C. Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures** 1. Well Siting 2. Groundwater Monitoring 3. Regulatory Compliance

Impact	Impact Conclusions	Proposed Mitigation
	(inducing movement of) poorer-quality water	
	Water Treatment Facilities Water treatment facilities could violate standards or waste discharge requirements if discharges do not comply with all regulations pertaining to water quality standards and regulations to prevent degradation of water quality in receiving waters Degradation of surface water and/or groundwater quality could occur if treatment sludge is not properly contained Degradation of surface water quality could result from discharge of brine at desalination facilities Degradation of surface water and/or groundwater quality could occur from accidental release of water treatment chemicals during transport, storage, or use Operation of subsurface or open water intakes at desalination facilities can result in significant intake and mortality of all forms of marine life from impingement and entrainment New drinking water treatment plants that include groundwater wells could result in impacts described for new groundwater wells (see *Groundwater Wells and Groundwater Storage and Recovery*) Maintenance of a water treatment facility would require storage and use of chemicals (e.g., coagulants, flocculants, chlorination agents, biocides) as part of the water treatment process; accidental release of these chemicals, which could be transported off site by stormwater to	**D. Water Treatment Facilities WQ Mitigation Measures** 1. Regulatory Compliance 2. Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures (7.22 MM-WQ-a–j: C) (i.e., well siting, groundwater monitoring, and regulatory compliance, if applicable) 3. Hazardous Materials Business Plan (7.22 MM-HAZ-a-h: H1), as applicable 4. Desalination Facilities WQ Mitigation Measures

Impact	Impact Conclusions	Proposed Mitigation
	surface water, could adversely affect surface water quality as well as groundwater quality	
	Less than Significant	
	Reservoirs and Points of Diversion Flood control rules would be developed for new or modified reservoirs to provide sufficient storage space to contain inflow during high runoff events and prevent use of emergency spillways Reservoir releases are generally limited to flows that can be contained by downstream levees; although, in some instances of very high inflows, required reservoir releases may exceed downstream levee capacities	—
	Beneficial	
	Reservoirs and Points of Diversion Off-stream reservoirs would reduce flooding associated with local drainages in the reservoir footprint and could reduce flooding in the source-water stream by diverting water during high flows Dams and points of diversion can reduce peak winter flow, which would reduce large-scale movement of substrate and potentially contaminated sediment Dams and points of diversion could reduce floodplain inundation, potentially reducing formation of methylmercury Some dams can prevent further expansion of invasive species	—
LAND USE AND PLANNING		
Impact LU-a: Physically divide an established community **Impact LU-b:** Conflict with any applicable land use	**Potentially Significant**	
	Common Construction Temporary effects on existing land uses by	**7.22 MM-LU-a–c: Mitigate land use impacts** **A. Construction LU Mitigation Measures**

Impact	Impact Conclusions	Proposed Mitigation
plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect **Impact LU-c:** Conflict with any applicable habitat conservation plan or natural community conservation plan? *Refer to Section 7.22.2.4, Biological Resources*	activities such as ground clearing, increased traffic, noise, dust, and human activity, as well as by changes in the visual landscape Construction may temporarily physically divide an established community, primarily by cutting off access to roadways or bridges Siting permanent facilities within an established community (e.g., distribution pipelines and other infrastructure) could create physical barriers that could divide the community Siting and construction could result in a permanent change in land use that could conflict with land use plans, policies, or regulations, depending on the location, configuration, and magnitude of the project	**(CMM-LU-a–c)** 1. Regulatory Compliance 2. Project Siting and Design 3. Traffic Mitigation Plan (CMM-TRA-a,b,d-f: 3)
	Reservoirs and Points of Diversion Siting of reservoirs or points of diversion and associated facilities may conflict with existing land uses and require changes to the land use designations in local general and specific plans Removal of bridges and roads may result in permanent physical division of an established community	**B. Reservoirs and Points of Diversion LU Mitigation Measures** 1. Feasibility Study 2. Minimize Community Disruption due to Hauling/Disposing of Construction Waste 3. Provide Appropriate Land Compensation 4. Project Planning (7.22 MM-TRA-a,b,d–f: B1) 5. Reservoirs and Points of Diversion REC Mitigation Measures (7.22 MM-REC-a,b: B)
MINERAL RESOURCES		
Impact MIN-a: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? **Impact MIN-b:** Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan	**Potentially Significant**	
	Common Construction Construction activities could be located in areas with active natural gas, oil, or aggregate production or with the potential to contain untapped reserves of those resources and restrict access	**7.22 MM-MIN-a,b: Mitigate impacts on mineral resources** **A. Construction MIN Mitigation Measures (CMM-MIN-a,b)** 1. Project Siting and Design 2. Aggregate Use 3. Access to Extraction Sites

Impact	Impact Conclusions	Proposed Mitigation
	Construction demand for aggregate and/or cement for construction projects could exceed local supplies	4. Implement the California Department of Conservation's Geologic Energy Management Division's (CalGEM) Recommendations
NOISE		
Impact NOI-a: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies **Impact NOI-b:** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels **Impact NOI-d:** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project **Impact NOI-e:** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels **Impact NOI-f:** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels	**Potentially Significant**	
	Common Construction Construction would result in temporary noise and groundborne vibration from the use of heavy construction equipment (e.g., excavators, bulldozers, pile drivers, jackhammers), drilling, and blasting Noise-sensitive receptors may be exposed to noise levels in excess of established standards or to a substantial increase in ambient noise Project sites may be located near a public or private airport or airstrip and temporarily expose construction crews to excessive noise levels	**7.22 MM-NOI-a–f: Mitigate noise and vibration impacts** **A. Construction NOI Mitigation Measures (CMM-NOI-a,b,d–f)** 1. Regulatory Compliance 2. Noise-Reduction Measures 3. Vibration-Reduction Measures 4. Blasting Operations and Safety Plan (CMM-GEO-a-e: 7) 5. Construction near Airports (CMM-HAZ-a-h: 8)
	Less than Significant	
	New or Modified Facilities Operation and maintenance of new or modified facilities likely would not result in exposure of sensitive receptors to or generation of excessive groundborne noise or vibration levels because vibration generated by most activities is relatively minor and would not occur at a perceptible level	—
Impact NOI-c: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project	**Potentially Significant**	
	Reservoirs and Points of Diversion, Groundwater Wells and Groundwater Storage and Recovery, and Water Treatment Facilities	**B. Reservoirs and Points of Diversion, Groundwater Wells and Groundwater Storage and Recovery, and Water Treatment Facilities NOI Mitigation Measures (NOI-a,c,d)**

Impact	Impact Conclusions	Proposed Mitigation
	Operation and maintenance could generate noise, including permanent or periodic increased ambient noise from intakes and conveyance facilities; use of transformers, generators, fans, groundwater well and other pumps, and alarms	1. Noise-Reduction Consideration in Project Design and Operations 2. Operational Truck Traffic Noise
POPULATION AND HOUSING		
Impact POP-a: Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) **Impact POP-b:** Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere **Impact POP-c:** Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere	**Less than Significant**	
	New or Modified Facilities During construction, non-locals may move to a project area to support these activities; however, any additional need for lodging would be temporary and could likely be met via local accommodations New or modified facilities would not involve construction of new homes or businesses, extension of roads, other infrastructure, or other actions that may directly or indirectly induce substantial population growth in an area Job creation is not expected to cause substantial population growth because new or modified facility projects do not require extensive staff and therefore would add few jobs A small number of people would be displaced by a new reservoir and would not result in a housing shortage or cause increased demand in another community	—
PUBLIC SERVICES		
Impact PS-a: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in	**Less than Significant**	
	New or Modified Facilities New or modified facilities would not result in increases in housing or in population and therefore would not create a need for additional schools, parks, or other public	—

Impact	Impact Conclusions	Proposed Mitigation
order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: fire protection, police protection, schools, parks (see Recreation), or other public facilities	facilities Construction activities could result in temporary, short-term increased response times for fire, police, and other emergency responders due to increased construction traffic and potential road closures and detours Construction activities could result in temporary increases in the number of fire, police, or emergency medical provider service calls in the vicinity of work sites for emergencies related to construction; but calls are not expected to be large enough or frequent enough to affect response times beyond the regular variation experienced by providers of emergency services	
RECREATION		
Impact REC-a: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated **Impact REC-b:** Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment	**Potentially Significant**	
	Common Construction Recreationists could be affected by construction-related traffic, visual impacts, water quality effects, noise, fugitive dust, and exhaust emissions from heavy equipment; restricted access to recreational facilities could result in physical deterioration of alternative locations and facilities	**7.22 MM-REC-a,b: Mitigate impacts on recreation** **A. Construction REC Mitigation Measures (CMM-REC-a,b)** 1. Project Siting and Design 2. Maintain Access to Existing Recreational Facilities during Construction 3. Coordinate with Public and Private Recreation Providers 4. Rehabilitate or Restore Degraded Recreational Facilities or Provide Replacement Recreational Facilities 5. Construction AES Mitigation Measures (CMM-AES-a–d) 6. Construction AQ Mitigation Measures (CMM-AQ-a–e) 7. Construction WQ Mitigation Measures (CMM-WQ-a–j)

Impact	Impact Conclusions	Proposed Mitigation
		8. Construction NOI Mitigation Measures (CMM-NOI-a,b,d–f) 9. Construction TRA Mitigation Measures (CMM-TRA-a,b,d–f)
	Reservoirs and Points of Diversion Larger reservoirs and points of diversion facilities could restrict recreation in the vicinity of diversion because of a need for a safety zone around the facility Reservoirs and points of diversion may alter water levels and flow, which could adversely affect boating and fishing areas, public and private recreational facilities, or waterways used for recreation Reservoirs and points of diversion projects could inundate areas previously used for recreation Displacement of recreationists to other locations could result in accelerated physical deterioration of some recreational facilities over time	**B. Reservoirs and Points of Diversion REC Mitigation Measures** 1. Project Siting and Design 2. Project Planning 3. Coordination with Public Recreation Providers 4. Compensate for Impacts on Recreational Facilities 5. Construction WQ Mitigation Measures (CMM-WQ-a–j) 6. Construction BIO Mitigation Measures (CMM-BIO-a–f)
	Water Treatment Facilities If a new wastewater treatment plant were located near an established recreational area, recreationists may choose other recreational locations because of odor from treatment operations; this could result in accelerated physical deterioration of these alternative locations and facilities over time	**C. Water Treatment Facilities REC Mitigation Measures** 1. Water Treatment Facilities AQ Mitigation Measures (7.22 MM-AQ-a–e: C)
	Less than Significant	
	Other Construction Projects Agricultural canal lining or encasement could reduce fishing opportunities by reducing the numbers of sport fish in a canal	—

Impact	Impact Conclusions	Proposed Mitigation
	Beneficial	
	Reservoirs and Points of Diversion New reservoirs would likely include development of reservoir-associated recreation facilities ***Water Treatment Facilities*** Water treatment facilities could include recreation benefits, such as a visitor center, trails, or educational signage ***Other Construction Projects*** Modifications of reservoir boat ramps would allow continued use of an existing recreational facility	—
TRANSPORTATION AND TRAFFIC		
Impact TRA-a: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit **Impact TRA-b:** Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways **Impact TRA-d:** Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) **Impact TRA-e:** Result in inadequate emergency access	**Potentially Significant**	
	Common Construction Construction activities could result in temporary and short-term increases in traffic due to additional vehicles (e.g., construction vehicles, construction workers' personal vehicles) on roads near project sites and relocating roads, which would cause new rerouted traffic at an intersection not designed to accommodate additional traffic Construction activities may result in degradation of roads from haul trucks or trips required for fill transport Temporary relocation, closure, or complete removal of existing bicycle and pedestrian paths and trails could occur during construction Projects requiring in-channel construction activities could temporarily obstruct boat navigation and cause boat traffic delays and construction equipment, such as dredges	**7.22 MM-TRA- a,b,d–f: Mitigate transportation impacts** **A. Construction TRA Mitigation Measures (CMM-TRA-a,b,d–f)** 1. Regulatory Compliance 2. Avoid and Minimize Interference with Transportation Networks 3. Traffic Management Plan 4. Restore Damaged Transportation Facilities 5. Waterway Traffic Control Plan 6. Road and Bridge Design

Impact	Impact Conclusions	Proposed Mitigation
Impact TRA-f: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities	and cofferdams, could temporarily obstruct boat traffic Construction projects may result in roads being temporary blocked, rerouted, or altered, which could affect emergency access Permanent relocation of road segments could require changes that could increase or introduce a hazard to vehicles traveling on that segment	
	Reservoirs and Points of Diversion Reservoirs could require dredging operations, which would increase traffic related to trucking dredged material to another location for reuse or disposal Operation of reservoirs with recreational facilities could attract a substantial number of recreationists, which could cause periodic traffic congestion as well as unplanned wear and tear on rural roads	**B. Reservoirs and Points of Diversion TRA Mitigation Measures** 1. Project Planning 2. Road Design 3. Feasibility Study (7.22 MM-LU-a–c: B1) 4. Project Siting and Design (7.22 MM-REC-a,b: B1) 5. Project Planning (7.22 MM-REC-a,b: B2)
	Less than Significant	
	New or Modified Facilities Limited additional vehicle trips would be associated with workers commuting to sites to conduct operation and maintenance activities	—
Impact TRA-c: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks	**No Impact**	
	New or Modified Facilities New or modified facilities would not result in a change in air traffic patterns because no airport facilities are proposed, and demand for air travel would not increase as a result of implementing these types of projects	—

Impact	Impact Conclusions	Proposed Mitigation
UTILITIES AND SERVICE SYSTEMS		
Impact UT-a: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board **Impact UT-c:** Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects **Impact UT-f:** Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs **Impact UT-g:** Comply with federal, state, and local statutes and regulations related to solid waste	**Potentially Significant**	
	Common Construction Construction sites could generate stormwater runoff that discharges sediment and other pollutants Wastewater from construction could include wastewater from sanitation facilities used by construction crews or wastewater generated directly from construction-related activities Construction activities could temporarily increase the volume of solid waste (e.g., soil, vegetative material, construction debris) disposed of at landfills Construction activities could temporarily disrupt existing electric and natural gas utilities and telecommunication lines and could damage utility poles or snag suspended utility lines	**7.22 MM-UT-a,c–g: Mitigate impacts on utilities and service systems** **A. Construction UT Mitigation Measures (CMM-UT-a,c,f,g)** 1. Wastewater Control Measures 2. Water Supply 3. Non-Hazardous Waste Disposal 4. Utility Services 5. Site-Specific Drainage Study
	Reservoirs and Points of Diversion Expansion of existing reservoirs through dredging may result in dredged material that cannot be reused for beneficial purposes and thus would require disposal at an appropriate landfill facility Reservoirs and points of diversion would require State Water Board approval of a new water right or a change of an existing right	**B. Reservoir and Points of Diversion UT Mitigation Measure** 1. Reservoirs and Points of Diversion WQ Mitigation Measures (7.22 MM-WQ-a–j: B)
	Groundwater Wells and Groundwater Storage and Recovery A new groundwater well would require a valid groundwater right, either overlying or appropriative, and depending on the location, the right would need to be	**C. Groundwater Wells and Groundwater Storage and Recovery UT Mitigation Measure** 1. Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures (7.22 MM-WQ-a–j: C)

Impact	Impact Conclusions	Proposed Mitigation
	consistent with any relevant groundwater sustainability plan (GSP) Groundwater storage and recovery of surface water would capture a new supply that is generally not subject to existing entitlements; therefore, new entitlement could be required in the form of water right permits from the State Water Board	
	Water Treatment Facilities Drinking water treatment plants would require a valid water right if drawing surface water or groundwater as a source, and groundwater withdraw may require consistency with a GSP depending on the location	**D. Water Treatment Facilities UT Mitigation Measure** 1. Water Treatment Facilities WQ Mitigation Measures (7.22 MM-WQ-a–j: D)
Impact UT-b: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects **Impact UT-d:** Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed **Impact UT-e:** Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments	**Less than Significant**	
	Common Construction Construction activities would require a water supply, but the uses for this water during construction would not be of sufficient magnitude or duration to require new or expanded entitlements for water supply Wastewater generated during construction would not likely require construction of new or expanded wastewater treatment facilities or result in a determination by the wastewater treatment provider that it has inadequate capacity; wastewater generated during construction would not affect the ability of a wastewater treatment facility to meet the wastewater treatment requirements of a regional water board	—
	Potentially Significant	
	Reservoirs and Points of Diversion Reservoirs and points of diversion would	—

Impact	Impact Conclusions	Proposed Mitigation
	require State Water Board approval of a new water right or a change of an existing right	
	Groundwater Wells and Groundwater Storage and Recovery New groundwater well would require a valid groundwater right, either overlying or appropriative, and depending on the location Groundwater storage of surface water would capture a new supply that is generally not subject to existing entitlements; this would require new entitlement in the form of a water right permit from the State Water Board	—

† Table 1-3 is the same Impact and Mitigation Measure Summary Table presented in Section 13.7.22, *Impact Summary* (see Table 13.7.22-3).

GHG = greenhouse gas; GSP = groundwater sustainability plan; HCP = habitat conservation plan; HAB = harmful algal bloom; NCCP = natural community conservation plan.

1.6 References

1.6.1 Common References

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1.6.2 Section References

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