Appendix Y Cumulative Methodology

Cumulative impacts are defined by the Council on Environmental Quality (CEQ) regulations in 40 Code of Federal Regulations Section 1508.7 as "the impact on the environment which results from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time." Cumulative impacts include the direct and indirect impacts of a project together with the past, present, and reasonably foreseeable future actions of other projects. According to CEQ's cumulative impacts guidance, the cumulative impact analysis should be narrowed to focus on important issues at a national, regional, or local level. The analysis should look at other actions that have affected or could affect the same resources as the proposed action and alternatives

Table Y-1 provides a summary of the past, present, and reasonably foreseeable projects that, when combined with the No Action Alternative and Alternatives 1 through 4, serve as the foundational information for conducting the cumulative impact assessments for many of the resources addressed in the Environmental Impact Statement (EIS). The list reflects projects which have occurred or are expected to occur within the study area and are similar in scope (i.e., water supply, restoration, etc.) to the project alternatives being evaluated in the EIS. The table includes the name of the project, lead agency(s), summary description of the scope of the project, and references to where project documentation may be located.

Not all of the projects included in this list may have been considered within the cumulative assessment for each resource analyzed in the EIS. The projects were first screened to determine if they could have an impact on a resource being evaluated. Once that initial screening was complete, only the remaining projects were considered in the analysis of a particular resource. Additionally, some cumulative assessments also considered other sources of information, including county-wide general plans or other planning-level documents which provide projections of population growth and land use changes.

Table Y-1. Cumulative Methodology Summary

Project	Primary Agencies	Description
Water Supply and Water Quality Projects and Actions		
Bay-Delta Water Quality Control Plan Update	State Water Resources Control Board (SWRCB)	The SWRCB is updating the 2006 Bay-Delta Water Quality Control Plan (WQCP) in two phases (SWRCB 2018): Phase I: The first Plan amendment is focused on San Joaquin River flows and southern Sacramento-San Joaquin Delta (Delta) salinity and modifies water quality objectives (i.e., establishes minimum flows) on the Lower San Joaquin River and Stanislaus, Tuolumne, and Merced rivers to protect the beneficial use of fish and wildlife and modifies the water quality objectives in the southern Delta to protect the beneficial use of agriculture. The proposed final amendments to the Bay-Delta Plan and the Final Supplemental Environmental Document for Phase I was released in July 2018, with some additional minor changes released in August 2018. Phase II: Phase II is focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), Delta outflows, and interior Delta flows.
Shasta Lake Water Resources Investigation	Bureau of Reclamation (Reclamation)	Reclamation undertook the Shasta Lake Water Resources Investigation to determine the type and extent of federal interest in a multiple purpose plan to modify Shasta Dam and Reservoir to increase survival of anadromous fish populations in the upper Sacramento River; increase water supplies and water supply reliability to agricultural, municipal and industrial users, and environmental purposes; and, to the extent possible through meeting these objectives, include features to benefit other identified ecosystem, flood damage reduction, and related water resources needs, consistent with the objectives of the CALFED Bay-Delta Program (CALFED). The alternatives for expansion of Shasta Lake include, among other features, raising the dam from 6.5 to 18.5 feet above current elevation, which would result in additional storage capacity of 256,000 to 634,000 acre-feet (AF), respectively (Reclamation 2015a). The increased capacity is expected to improve water supply reliability and increase the cold water pool, which would provide improved water temperature conditions for anadromous fish in the Sacramento River downstream of the dam. The final EIS was released in 2014, and the final feasibility study was released in 2015. No Record of Decision (ROD) has been issued. However, in March 2018, Congress appropriated $20 million for Shasta preconstruction activities. The Shasta Dam Raise Project is expected to be complete by February 2024 (Reclamation 2018a).
Sites Reservoir Project	Reclamation, Sites Project Authority	The Sites Reservoir Project involves the construction of offstream surface storage north of the Delta for enhanced water management flexibility in the Sacramento Valley, increased California water supply reliability, and storage and operational benefits for programs to enhance water supply reliability, both locally and State-wide, benefit Delta water quality, and improve ecosystems. Secondary objectives for the project are to: 1) allow for flexible hydropower generation to support integration of renewable energy sources, 2) develop additional recreation opportunities, and 3) provide incremental flood damage reduction opportunities (Sites Project Authority and Reclamation 2017). The Draft Environmental Impact Report/Environmental Impact Study (EIR/EIS) was released for public review on August 14, 2017.
Federal Energy Regulatory Commission (FERC) License Renewals	FERC	There are 22 hydroelectric generation FERC permits that will expire prior to 2030 (FERC 2015). Fifteen projects in the Sacramento River watershed include one on the Pit River (upstream of Shasta Lake), six on the Feather River, four on the Yuba River, one on the Bear River, one on the American River, and one each on Cow and Battle creeks. Projects in the San Joaquin River watershed include four on the San Joaquin River, one on the Stanislaus River, two on the Merced River, and one on the Tuolumne River. The FERC must complete analyses under the National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) to consider the effects of the hydropower operations on the environment, including flow regimes, water quality, fish passage, recreation, aquatic and riparian habitat, and special status species.
State Water Project (SWP) Oroville Project	FERC, California Department of Water Resources (DWR)	The Oroville Facilities, as part of the SWP, are also operated for flood management, power generation, water quality improvement in the Delta, recreation, and fish and wildlife enhancement. The objective of the relicensing process is to continue operation and maintenance of the Oroville Facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license. The initial FERC license for the Oroville Facilities, issued on February 11, 1957, expired on January 31, 2007. DWR published the Final EIR in June 2008 and the Notice of Determination (NOD) in July 2008 (DWR 2008). DWR is awaiting the FERC license renewal.
Yuba River Watershed Hydroelectric Projects	FERC, Nevada Irrigation District, Pacific Gas & Electric Company (PG&E)	The Nevada Irrigation District is applying for a new license for the Yuba-Bear Project (FERC Project No. 2266), and PG&E are applying for the Drum-Spaulding Project (FERC Project No. 2310). The Yuba-Bear Project is located on the Middle and South Yuba rivers, Bear River, and Jackson and Canyon creeks (FERC 2014). Concurrently, PG&E is applying for a license renewal for the Drum-Spaulding Project which is located on the Bear and Yuba rivers. Operations of the two projects are coordinated in many factors. The FERC relicensing processes for these two projects in underway (Yuba River Watershed Information System N.d).

Project	Primary Agencies	Description
Turlock Irrigation District and Modesto Irrigation District Don Pedro Project	FERC, Turlock Irrigation District (TID), Modesto Irrigation District (MID)	The Don Pedro Project is located on the Tuolumne River in Tuolumne County. The initial license was issued for operations between 1971 and 1991 followed by requirements to evaluate fisheries water needs in the Tuolumne River. In 1987, after the Turlock Irrigation District and Modesto Irrigation District applied to amend their license to add a fourth generating unit, FERC approved an amended fish study plan with possible changes in 1998. In 1996, FERC amended the license to implement amended minimum flow criteria and require fish monitoring studies for completion in 2005. In 2002, the National Marine Fisheries Service (NMFS) requested that FERC initiate formal consultation on the effects of the Don Pedro Project on Central Valley Steelhead. The FERC approved the Summary Report on fisheries in 2008. In 2009, NMFS, United State Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and several environmental interest groups filed requests for rehearing on the license. FERC denied portions of the request but required instream flow studies to be conducted and required NMFS to be included for consultation on any authorized changes to minimum flow release schedules. The FERC also directed the appointment of an administrative law judge to assist in assessing the need for and feasibility for interim measures prior to relicensing. A final report was completed in 2010. Following the completion of the report and a monitoring plan by the affected districts, FERC approved an order modifying and approving instream flow and monitoring study plans. A final license application, including an Environmental Report, was submitted to FERC in April 2014 (TID and MID 2014). An amendment to the final license application was submitted to FERC in October 2017 (TID and MID N.d). The current license expired in 2016. The objective of the relicensing process is to continue operation and maintenance of the Don Pedro Project facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license.
Merced Irrigation District's Merced River Hydroelectric Project	FERC, Merced Irrigation District (ID)	The Merced River Hydroelectric Project is located on the Merced River in Mariposa County and includes both Lake McClure and McSwain Reservoir, two powerhouses (New Exchequer and McSwain), and recreation facilities. The Project does not include any transmission lines, canals, or open conduits. The installed capacity of the Merced River Hydroelectric Project is 103.5 megawatts (Merced ID N.d).The initial FERC license expired on February 28, 2014. The objective of the relicensing process is to continue operation and maintenance of the Merced River Hydroelectric Project facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license (Merced ID 2015).
Yuba River Development Project Relicensing	FERC, Yuba County Water Agency	The Yuba County Water Agency is seeking to renew their 50-year FERC license for the Yuba River Development Project (FERC Project No. 2246). The Yuba River Development Project is located on the Yuba River, the Middle Yuba River, and Oregon Creek in Yuba County, California, and consists of one reservoir (New Bullards Bar on the North Yuba River), two diversion dams (Our House Diversion Dam on the Middle Yuba River and Log Cabin Diversion Dam on Oregon Creek), three powerhouses (New Colgate, Fish Release, and Narrows No. 2), and various recreational facilities and appurtenant facilities (Yuba County Water Agency 2016). New Bullards Bar Reservoir has a capacity of 969,600 AF. The initial FERC license expired April 30, 2016, and the Yuba County Water Agency has engaged in FERC's Integrated Licensing Process to prepare an application for a new license. The Yuba County Water Agency filed a Draft Application for a New License Major Project – Existing Dam, on December 3, 2013, and a Final Application for a New License Major Project – Existing Dam, on April 28, 2014. FERC issued the Final EIS in January 2019.
El Dorado Water and Power Authority Supplemental Water Rights Project	El Dorado Water and Power Authority	The El Dorado Water and Power Authority (EDWPA) proposes to establish permitted water rights allowing diversion of water from the American River basin to meet planned future water demands in the El Dorado Irrigation District and Georgetown Divide Public Utility District service areas and other areas located within El Dorado County that are outside of these service areas. The EDWPA filed petitions with the SWRCB for partial assignment of State Filed Applications 5644 and 5645, and accompanying applications allowing for the total withdrawal and use of 40,000 acre-feet per year, consistent with the diversion and storage locations allowed under the El Dorado-Sacramento Municipal Utility District Cooperation Agreement (EDWPA 2010). A Notice of Preparation of an Environmental Impact Report for the Project was submitted in October 2008 (EDWPA 2008).
Semitropic Water Storage District Delta Wetlands	Semitropic Water Storage District, Delta Wetlands	In 1987, Delta Wetlands, a California Corporation, proposed a project for water storage and wildlife habitat enhancement on four privately owned islands in the Delta. The four islands were Bacon Island and Bouldin Island in San Joaquin County and Holland Tract and Webb Tract in Contra Costa County, encompassing approximately 23,000 acres. The Delta Wetlands Project would store water on two Reservoir Islands (Bacon Island and Webb Tract) for subsequent release into the Delta, and habitat enhancement to compensate for wetland and wildlife effects of the water storage operations with a Habitat Management Plan on two Habitat Islands (Bouldin Island and Holland Tract). In 2007, the Delta Wetlands Project partnered with the Semitropic Water Storage District (Semitropic WSD) to: 1) provide water to Semitropic WSD to augment its water supply, and 2) bank water within the Semitropic Groundwater Storage Bank and Antelope Valley Water Bank. The designated places of use for Delta Wetlands Project water would include: Semitropic WSD; Member Agencies of the Metropolitan Water District of Southern California, the Western Municipal Water District of Riverside County, and select service areas of the Golden State Water Company. The project would include improvements of 27 miles of levees and screened diversions to divert water during high-flow periods in the winter months of December through March into Webb Tract (100,000 AF of storage) and Bacon Island (115,000 AF of storage). The water would not be diverted in a manner that would adversely affect senior legal water rights holders, including the SWP and Central Valley Project (CVP). Stored water would be discharged into False River (from Webb Tract) and Middle River (from Bacon Island) for export when excess SWP or CVP diversion capacity is available, in the summer and fall months of July through November. Any water that could not be exported from the Delta in a given year would be available to increase Delta outflow in the fall months of September through November. Semitropic WSD issued a Draft EIR in 2010,a Final EIR in August 2011, and an addendum to the Final EIR on September 2011 (Semitropic WSD 2011).

Project	Primary Agencies	Description
North Bay Aqueduct Alternative Intake	DWR, Solano County Water Agency, Napa County Flood Control and Water Conservation District	DWR is evaluating the implementation of an alternative intake on the Sacramento River upstream of the Sacramento Regional Wastewater Treatment Plant, and conveyance facility to connect the intake with the existing North Bay Aqueduct. The proposed alternative intake would be operated in conjunction with the existing North Bay Aqueduct intake at Barker Slough. The proposed project would be designed to improve water quality and to provide reliable deliveries of SWP supplies to its contractors, the Solano County Water Agency and the Napa County Flood Control and Water Conservation District (DWR 2011). The proposed project would include construction and operation of a 240 cubic feet per second (cfs) capacity intake with state-of-the-art positive barrier fish screens, pumping plant, sediment basins, and ancillary support facilities located on the west side of the Sacramento River near south Sacramento. The conveyance facility would include an approximately 30 mile long, 72 to 84-inch diameter underground steel and/or concrete pipeline to convey the water from the alternate intake to the existing North Bay Aqueduct. Two options are proposed for the location of the alternate intake facility. Alternate intake site 1 is located on the outside edge of Garcia Bend of the Sacramento River (on the west bank), approximately 500 feet south of the boundary of the City of West Sacramento. Alternate intake site 2 is located immediately south of the outside edge of Garcia Bend of the Sacramento River (on the west bank), approximately 2,500 feet south of the boundary of the City of West Sacramento. The intake and pumping plant facility would be constructed on the water side of the Sacramento River levee and the remaining components would be constructed on the land side of the levee. The intake would extend about 100 feet from the top of the levee into the river. The exact amount of this extension would depend on the site option selected. A fish screen would be installed on the face of the intake structure to prevent fish from swimming or being drawn into the intake and it would be designed to meet CDFW, NMFS, and USFWS criteria. The dimensions of the fish screen would be based on an anticipated approach velocity of 0.2 feet per second at the fish screen. Flow-control louvers behind the screen would control flow rates through the screen to assure uniform water velocity across the screen. Normal operation would keep the top of the screen below low water elevation. A reduction in pumping would occur any time the screens are not submerged or the water velocities increased. Above the screen would be concrete panels which extend to the 200 year flood elevation. A log boom would be installed in front of the fish screen to block large debris from blocking or damaging the intake. The intake would be equipped with an automatic fish screen cleaning system. Environmental analysis, planning, and design for Project was completed in March 2018 (California Natural Resources Agency [CNRA] 2018a).
Los Vaqueros Reservoir Expansion Phase 2	Reclamation, Contra Costa Water District (CCWD), DWR	Los Vaqueros Reservoir is an off-stream reservoir in the Kellogg Creek watershed to the west of the Delta. The Los Vaqueros Reservoir initial construction was completed in 1997 as a 100,000 AF off-stream storage reservoir owned and operated by CCWD to improve delivered water quality and emergency storage reliability to their customers. In 2012, the Los Vaqueros Reservoir was expanded to a total storage capacity of 160,000 AF (Phase 1) to provide additional water quality and supply reliability benefits, and to adjust the timing of its Delta water diversions to accommodate the life cycles of Delta aquatic species, thus reducing species impact and providing a net benefit to the Delta environment. As part of the Storage Investigation Program described in the CALFED Bay Delta Program ROD, additional expansion up to 275,000 AF (Phase 2) is being evaluated by CCWD, DWR, and Reclamation. The alternatives considered in the evaluation also consider methods to convey water from Los Vaqueros Reservoir to the South Bay Aqueduct to provide water to Zone 7 Water Agency, Alameda County Water District, and Santa Clara Valley Water District. The Final EIS/R was released by Reclamation and CCWD on March 15, 2010. Construction is planned to begin as early as 2021, with a 6-year construction period (Reclamation 2018b).
Upper San Joaquin River Basin Storage Investigation	Reclamation, DWR	The Upper San Joaquin River Basin Storage Investigation is being conducted by Reclamation and DWR to evaluate alternative plans to increase Upper San Joaquin River Storage to enhance the San Joaquin River restoration efforts and improve water supply reliability for agricultural, municipal and industrial, and environmental uses in the Friant Division, the San Joaquin Valley, and other regions of the state. The investigation is evaluating integration of conjunctive management and water transfer concepts into plan formulations. Additional storage is also expected to provide incidental flood damage reduction benefits (Reclamation 2014a). Reclamation is analyzing alternatives for a new dam and a 1,260,000 AF reservoir along the San Joaquin upstream of Millerton Lake in an area known as Temperance Flat. Primary planning objectives are to: 1) increase water supply reliability, and 2) enhance flow and temperature conditions to support the San Joaquin River Restoration Program. Operation variables include reservoir carryover, new or shifting water supply beneficiaries, and alternative conveyance routes. Reclamation released a Draft Feasibility Report in February 2014 and a Draft EIS in September 2014 (Reclamation 2017).
Central Valley Regional Water Quality Control Board (RWQCB) Irrigated Lands Regulatory Program	Central Valley RWQCB	The Irrigated Lands Regulatory Program regulates discharges from irrigated agricultural lands. Its purpose is to prevent agricultural discharges from impairing the waters that receive the discharges. The California Water Code authorizes the SWRCB and RWQCBs to conditionally waive waste discharge requirements if this is in the public interest. On this basis, the Los Angeles, Central Coast, Central Valley, and San Diego regional water quality control boards have issued conditional waivers of waste discharge requirements to growers that contain conditions requiring water quality monitoring of receiving waters. In 2010, the Central Valley RWQCB proposed to expand the requirements to groundwater especially for regulation of discharges with higher concentrations of nutrients (Central Valley RWQCB 2011). Participation in the waiver program is voluntary; however, non-participant dischargers must file a permit application as an individual discharger, stop discharging, or apply for coverage by joining an established coalition group. The waivers must include corrective actions when impairments are found.
San Luis Reservoir Low Point Improvement Project	Reclamation	The San Luis Reservoir Low Point Improvement Project is proposed by Reclamation and the Santa Clara Valley Water District. As part of this project, Reclamation is investigating four alternatives to avoid supply interruptions and increase the reliability and quantity of yearly allocations to South-of-Delta contractors. The alternatives being considered are to 1) construct a new, lower San Felipe Intake, 2) technology retrofits at Santa Clara Valley Water District's Santa Teresa Water Treatment Plant, 3) increasing San Luis Reservoir storage capacity, or 4) expansion of Pacheco Reservoir. If Pacheco Reservoir were to be enlarged, the reservoir would be filled with Delta water; thus, additional impacts on Delta aquatic species (e.g., juvenile salmonids and Delta Smelt) could result from an increase in Delta exports. The draft EIS/EIR and feasibility report are currently being developed.

Project	Primary Agencies	Description
Westlands v. United States Settlement	Westlands Water District	In August 2015, Westlands Water District and the United States agreed upon a settlement involving several litigations, as described below. The settlement is contingent upon Congressional authorization of enabling legislation (Reclamation 2015b). The following information provides a summary from the Reclamation news release in October 2015. In 2000, the court in Firebaugh Canal Co v. United States, issued an Order requiring the Secretary of the Interior to provide drainage service to lands served by the San Luis Unit of the Central Valley Project. In 2007 Reclamation signed a ROD selecting a drainage plan and finding that the cost of providing drainage for lands served by the San Luis Unit. Reclamation began implementing the selected drainage plan in a portion of Westlands Water District in 2010 on a court-ordered schedule. In 2011, individual landowners within Westlands Water District filed a takings claim against the United States alleging that failure to provide drainage service has caused a physical taking of their lands without just compensation in violation of the Fifth Amendment (Etchegoinberry v. United States). The Court of Federal Claims denied the government's motion to dismiss the complaint. This case is currently stayed. In January 2012, Westlands filed a breach of contract case alleging that the government's failure to provide drainage service to the Westlands Water District service area constituted a breach of Westlands Water District 1963 Water Service and 1965 Repayment contracts (including the interim renewal of those contracts). The case is currently stayed. Under the proposed terms of the Settlement, Westlands Water District will: • Permanently retire not less than 100,000 acres of land from production. Westlands Water District will agree to permanently retire a total of not less than 100,000 acres of lands within its boundaries utilizing those lands only for the following purposes: – Management of drain water, including irrigation of reuse areas; – Renewable energy projects; – Upland habitat restoration projects; or – Other uses subject to the consent of the United States. • Cap contract deliveries at 75 percent of its CVP contact amount (from 1.193 million AF to 895 thousand AF). Any water above this 75 percent cap, that would have been delivered to Westlands Water District, would instead be available to the United States for other public purposes under the CVP. • Assume all responsibility for drainage in accordance with all legal requirements under state and federal law. Westlands Water District would become legally responsible for the management of drainage water within its boundaries, in accordance with federal and California law. • Indemnify the United States for any damages and pay compensation for claims arising out of the Etchegoinberry litigation. Under the Settlement Westlands Water District will indemnify the United States for any claims (past, present and future) arising out of a failure to provide drainage service with Westlands Water District. Westlands Water District would also intervene in the Etchegoinberry case for Settlement purposes and would pay compensation to individual landowners. • Continue to wheel water to Lemoore Naval Air Station. As part of the overall Settlement, CVP water will be made available to Lemoore Naval Air Station and Westlands Water District would agree to wheel all CVP water made available to Lemoore under the same terms and conditions as Westlands Water District wheels water to other Westlands Water District's contractors. • Be relieved from potential drainage repayment. If the United States were to expend significant funds to provide a drainage solution, Reclamation would seek repayment from Westlands Water District (over 50 years, with no interest, commencing after completion of each separable element). By taking responsibility for drainage, Westlands Water District would also eliminate responsibility for repayment. Under the Terms of the Settlement, the United States will: • Be relieved of all statutory obligations to provide drainage. The Settlement Agreement would relieve the Department of the Interior from all drainage obligations imposed by the San Luis Act, including implementation of the 2007 ROD, which is estimated to cost approximately $3.5 billion ($513 million authorized). Westlands Water District will agree to dismiss with prejudice the Westlands v. U.S. breach of contract litigation and will join the U.S. in petitioning for vacatur of the 2000 Order Modifying Partial Judgment in the Firebaugh case directing implementation of drainage service and control schedules. • Receive a waiver of claims for potential damages due to a failure to provide drainage service. Westlands Water District will agree to provide for the release, waiver and abandonment of all past, present and future claims arising from the government's failure to provide drainage service under the San Luis Act, including those by individual landowners within Westlands Water District's service area, and would further agree to indemnify the United States for any and all claims relating to the provision of drainage service or lack thereof within the Westlands service area. • Relieve Westlands Water District repayment obligation for CVP construction charges to date (approximately $375 million). Westlands Water District will be relieved of its current, unpaid capitalized construction costs for the CVP, the present value of which is currently estimated to be $375 million. Under the Settlement, Westlands Water District will still be responsible for Operation and Maintenance, the payment of restoration fund charges pursuant to the CVPIA, and for future CVP construction charges. • Convert Westlands Water District water service contract into a repayment contract. The Secretary will convert Westlands Water District's current 9(e) water service contract to a 9(d) repayment contract consistent with existing key terms and conditions. As a "paid out" contractor, the benefit of this conversion is a permanent right to a stated share of CVP water. However, the terms and conditions of the contract—including the so called "shortage clause" – will otherwise be the same as in the current 9(e) contract.

Project	Primary Agencies	Description
		• Retain the right to cease water deliveries if Westlands Water District fails to meet its drainage obligation. Language in the Settlement makes the United States' obligation to provide water to Westlands under the 9(d) Repayment Contract conditional upon Westlands Water District's fulfillment of its obligations to manage drainage water within its service area. • Issue a water service contract to Lemoore Naval Air Station. As part of the overall Settlement, the United States is authorized to enter into a water service contract with Lemoore Naval Air Station to provide a guaranteed quantity of CVP water to meet the needs of the Naval Air Station associated with air operations and Westlands Water District will agree to wheel all CVP water made available to Lemoore.
Contra Loma Reservoir and Recreation Resource Management Plan	East Bay Regional Park District, Reclamation	The Contra Loma Recreation Resource Management Plan is a long-term plan to guide management of the resources on the federal lands within the 80-acre Contra Loma Reservoir and surrounding 661 acres of recreation areas in Contra Loma Regional Park and Antioch Community Park (Reclamation 2014b). The East Bay Regional Park District manages the federal lands and public recreation facilities under an agreement with Reclamation. The proposed plan is to expand recreational use and facilities to increase recreational demands, including establishment of an additional all-weather sports field, fishermen's shelter, playground structure, a disc golf course, and expanded swim lagoon and trails. A ROD for the Management Plan was signed in 2015 (Reclamation 2015c).
San Luis Reservoir State Recreation Area Resource Management Plan/General Plan	Reclamation, California Department of Parks and Recreation (CDPR)	The Resource Management Plan addressed recreational plans for the San Luis Reservoir State Recreation Area and adjacent lands in Merced County that are owned by Reclamation and managed by CDPR, DWR, and CDFW (Reclamation and CDPR 2013). The Final Resource Management Plan/General Plan and Final EIS/EIR was released in June 2013. The plan focused on boating management, cultural resources management, vegetation management, enhanced trails management, expanded visitor experiences and education opportunities, and road and utility upgrades.
Future Water Supply Projects		
Delta Conveyance	DWR	A Delta conveyance project that diverts water from the Sacramento River and includes a tunnel, intake structures and new pumping plants is a reasonably foreseeable project. At the time the Notice of Intent was issued for this project, California WaterFix had been approved by the State of California. DWR has stopped work on California WaterFix, but a delta conveyance project remains reasonably foreseeable given that an April 2019 Executive Order regarding how California intended to secure clean and dependable water supplies included direction to plan and modernize conveyance through the Bay-Delta with a new single tunnel project.
Future groundwater storage and recovery projects		1. City of Roseville (City of Roseville 2019) 2. Mokelumne River Water & Power Authority (Mokelumne River Water & Power Authority 2015) 3. Northeastern San Joaquin County Groundwater Banking Authority (NSJCGBA) (NSJCGBA 2011) 4. Stockton East Water District (Stockton East Water District 2012) 5. Madera Irrigation District (Reclamation 2011) 6. Kings River Conservation District (Kings River Conservation District 2012) 7. City of Los Angeles (City of Los Angeles 2013) 8. Los Angeles County (Los Angeles County 2013) 9. City of San Diego (City of San Diego 2009a, 2009b) 10. Rancho California Water District (Rancho California Water District 2011, 2012) 11. Eastern Municipal Water District (EMWD) (EMWD 2014a) 12. Jurupa Community Services District (Jurupa Community Services District et al. 2010)
Major conveyance projects		1. Bay Area Regional Water Supply Reliability (CCWD 2014, East Bay Municipal Utility District [EBMUD] 2014a) 2. Friant-Kern Canal and Madera Canal Capacity Restoration Projects (San Joaquin River Restoration Program [SJRRP] 2011, 2015) 3. Los Banos Creek Water Resources Management Plan (San Joaquin River Exchange Contractors Water Authority 2012)

Project	Primary Agencies	Description
Major recycled water projects (more than 10,000 AF/year)		Reasonably foreseeable recycled water projects: • City of San Diego Phase 1 Pure Water Facility- Proposed Pure Water Facility would produce 30 million gallon per day of potable water for City of San Diego residents starting 2023 (City of San Diego, 2018) Existing recycled water projects: • City of Fresno (City of Fresno 2011) • City of Los Angeles (City of Los Angeles 2005) • Central Basin Municipal Water District (Central Basin Municipal Water District 2011) • Foothill Municipal Water District (Metropolitan Water District of Southern California 2010) • Upper San Gabriel Valley Municipal Water District (Upper San Gabriel Valley Municipal Water District 2013) • West Basin Municipal Water District (West Basin Municipal Water District 2011, 2019) • Olivenhain Municipal Water District (Olivenhain Municipal Water District 2015) • EMWD (EMWD 2014b) • Inland Empire Utilities Agency (Inland Empire Utilities Agency 2014) • Palmdale Water District (Palmdale Water District 2010) • East Valley Water Reclamation Authority (Antelope Valley 2013)
Major future coastal desalination water projects		Reasonably foreseeable desalination projects: 1. Monterey Peninsula Water Supply Project- Proposed project would produce approximately 10,750 AF per year of desalinated water for the Monterey Bay Region. (California American Water 2018) 2. West Basin Municipal Water District Ocean Water Desalination Project- Proposed Project would produce approximately 21,500 AF of desalinated water to increase water supply reliability for large portions of Southern California communities. (West Basin 2018) 3. Huntington Beach Desalination Facility- Proposed seawater desalination facility would produce 50 million gallons per day (mgd) of water to Orange County residents. (Poseidon Water 2005) 4. Doheny Ocean Desalination Project- Proposed projects initial capacity would be approximately 5 mgd and could be scaled up to 15 mgd. Project would improve water reliability in South Coast Water District. (South Coast Water District 2018) Existing desalination projects: 1. Carlsbad Desalination Project- Plant delivers approximately 56,000 AF per year of desalinated water to San Diego County residents. The project originated in 1998 and was launched 2015. (San Diego County Water Authority 2015) 2. Charles Meyer Desalination Plant- Plant produces 3,125 AF of water annually and serves the City of Santa Barbara. Plant was built in 1991. (City of Santa Barbara, 2019) 3. Pebbly Beach Desalination Plant- Plant produces approximately 0.2 mgd and serves the City of Avalon. The desalinated plant has operated as a supplement to groundwater since 1990's. (City of Avalon 2016) 4. Morro Bay Desalination Plant, Morro Bay Power Plant and Diablo Canyon Nuclear Power Plant- All three facilities are located in san Luis Obispo County. Capacities of the plants vary from 0-10 mgd. (SWRCB 2017) 5. Moss Landing Power Plant, Marina Coast Water District Desalination Plant, Sand City Desalination Plant and Monterey Bay Aquarium- All four facilities are located in Monterey County. Capacities of the plants vary from 0-10 mgd. (SWRCB 2017)
Long-term and short-term water transfers	Reclamation, San Luis & Delta-Mendota Water Authority (SLDMWA), Biggs-West Gridley Water District	These projects provide water to municipal, agricultural, and ecosystem water users, including wildlife refuges including programs that transfer water from northern California to the San Joaquin Valley and southern California across the Delta (Reclamation and SLDMWA 2015; Biggs-West Gridley Water District 2015).
Water Supply Contract Extension Program	DWR	The State of California entered into long-term water supply contracts (Contracts) with water agencies in the 1960s. Under terms of the contracts, DWR provides a water service to these agencies, known as SWP Contractors, from the SWP in exchange for payments that will recoup all costs associated with providing this water service over the life of the SWP. The majority of the capital costs associated with the development and maintenance of the SWP is financed using revenue bonds. These bonds have historically been sold with 30 year terms that extend to the year 2035, the year in which most of the Contracts expire. The program mission is to extend the term and amend the SWP contracts by conducting negotiations between DWR and the SWP Contractors which will occur in a public forum to ensure continued water supply affordability while complying with obligations under the California Environmental Quality Act (CEQA), and the Monterey Settlement Agreement. In December 2018, DWR approved the Water Supply Contract Extension Project and subsequently filed an NOD (DWR 2018a).
System Reoperation Program	DWR	DWR is conducting a system reoperation study (SRS) to identify potential reoperation strategies for the statewide flood protection and water supply systems. The SRS includes four phases. Phase 1, Plan of Study, was completed in 2011. Phase 2, Strategy Formulation and Refinements, was completed in 2014. Phase 3, Preliminary Assessments of Strategies, was completed in August 2017. Phase 4, Reconnaissance Level Assessments of Strategies, is currently under development (DWR 2019a).

Project	Primary Agencies	Description
Contra Costa Canal Replacement Project	CCWD	CCWD's Canal Replacement Project will replace the canal with a pipeline along a portion of the 48-mile Contra Costa Canal near Oakley to reduce salinity and water quality impacts of groundwater seepage from adjacent agricultural areas, as well as to increase public safety and flood protection. Segment 1 of the Canal Replacement Project was completed in 2009, which installed 1,900 feet of pipeline from Pumping Plant 1 to Marsh Creek. In 2015, Segment 2 was completed and installed 6,00 feet of pipeline from Marsh Creek past Sellers Avenue. (CCWD 2017). In 2019, CCWD is constructing Segments 3 and 4 and will be initiating plans for the remaining Segment 5.
Alternative Intake Project	CCWD, Reclamation, and DWR	The Alternative Intake Project was completed in 2010. The project located a new drinking water intake at Victoria Canal, about 2.5 miles east of CCWD's existing intake on the Old River, which allows CCWD to divert higher quality water when it is available. The new screened intake includes a 2.5-mile pipeline extension and a new pumping plant that ties into CCWD's existing conveyance system. The new intake has the same capacity and similar design as the existing Old River intake (250 cfs).
Davis-Woodland Water Supply Project	Davis, Woodland, and University of California, Davis	The Davis-Woodland Water Supply Project up to 45,000 AF per year of surface water from the Sacramento River and convey it for treatment and subsequent use in Davis and Woodland and on the University of California, Davis campus. The purposes of the project are to provide a reliable water supply to meet existing and future needs, improve water quality for drinking supply purposes, and improve treated wastewater effluent quality through 2040. The Project facilities were completed in July 2016 (Woodland-Davis Clean Water Agency N.d). Project activities included construction and operation of a water intake/diversion, conveyance, and water treatment facilities. Surface water supplies would be acquired through new water rights and water rights transfers from senior water rights holders. The Project is located in the east-central portion of Yolo County, between and within the cities of Woodland and Davis, the University of California, Davis campus, and west of the Sacramento River. The new water diversion facility is constructed on the Sacramento River near the Interstate 5 crossing at the location of the existing Reclamation District 2035 diversion. The water treatment plant to treat the surface water diverted from the Sacramento River would have an ultimate capacity of up to 106 mgd. Water diversions under the project was made in compliance with Standard Water Right Permit Term 91, which prohibits surface water diversions when water is being released from CVP or SWP storage reservoirs to meet in-basin entitlements, including water quality and environmental standards for protection of the Delta. Water supply needs during periods applicable to Term 91 would be satisfied by entering into water supply transfer agreements with senior water rights holders within the Sacramento River watershed.
EBMUD Camanche Permit Extension	EBMUD	The proposed project would extend the term of the existing Camanche water right Permit 10478 through the year 2040. Extending the Camanche Permit would allow EBMUD additional time to apply the water provided under Permit 10478 to municipal and industrial use within EBMUD's designated service area. Additionally, EBMUD contends that the full entitlement of Permit 10478 through 2040 is needed to maintain operational flexibility to meet future projected water demand and address system vulnerabilities associated with several factors, including emergencies and potential effects of climate change. The final EIR was completed in September 2014 (EBMUD 2014b).
Water Supply Management Program (WSMP) 2040	EBMUD	EBMUD's current WSMP (WSMP 2020), adopted in 1993, serves as the basis for water conservation and recycling programs and for development of supplemental supply initiatives such as the Freeport Regional Water Project. The WSMP 2040 updates the current plan and extends the planning horizon another 20 years. It identifies and recommends a Preferred Portfolio of solutions to meet dry-year water needs through 2040, including desalination, enlargement of Mokelumne River reservoirs. The primary objectives of the WSMP 2040 are to maintain and improve EBMUD's water supply reliability to its customers and help meet the need for water in the future. WSMP 2040 will also adapt the EBMUD's water planning approach to circumstances that have changed since WSMP 2020 was adopted, such as competing and changing demands for water, the availability of Freeport water after 2009, and long-term climate change. The final WSMP 2040 was completed in April 2012 (EBMUD 2012).
Freeport Regional Water Project	Freeport Regional Water Authority and Reclamation	Freeport Regional Water Authority, a Joint Powers Authority created by exercise of a joint powers agreement between the Sacramento County Water Agency (SCWA) and EBMUD, constructed a new water intake facility/pumping plant and 17-mile underground water pipeline within Sacramento County. The new water intake facility and pumping plant is located on the Sacramento River at the Freeport Bend, just upstream of Freeport and 10 miles south of Sacramento. The pumping plant diverts up to 185 mgd from the river and pump it through new pipelines to EBMUD and SCWA project facilities. Components of the facility include an in-river intake fish screen, sheet-piled in-river transition structure, electrical substation, surge control facility, compressed air system, sediment collection and settling basin system, and utilities. Construction of the intake was completed in 2010; the Vineyard Surface Water Treatment Plant was completed in 2012 (Freeport Regional Water Project 2019).

Project	Primary Agencies	Description
Eastern San Joaquin Integrated Conjunctive Use Program	NSJCGBA	The Integrated Conjunctive Use Program is to develop approximately 140,000 to 160,000 AF per year of new surface water supply for the basin that will be used to directly and indirectly to support conjunctive use by the NSJCBGA member agencies. This amount of water would support groundwater recharge at a level consistent with the GBA's objectives for conjunctive use and the underlying groundwater basin. Within this framework, the program would implement the following categories of conjunctive use projects and actions: water conservation measures; water recycling; groundwater banking; water transfers; development of surface storage facilities; groundwater recharge; river withdrawals; and construction of pipelines and other facilities. To enable and facilitate sustainable and reliable management of San Joaquin County's water resources, NSJCGBA developed a series of Basin Management Objectives to support conjunctive use and address a variety of water resources issues, including groundwater overdraft, saline groundwater intrusion, degradation of groundwater quality, environmental quality, land subsidence, supply reliability, water demand, urban growth, recreation, agriculture, flood protection, and other issues. The purpose of the Basin Management Objectives is to ensure the long-term sustainability of water resources in the San Joaquin Region. A Final EIR for the program was released in February 2011 (NSJCGBA 2011).
Emergency Storage Project	San Diego County Water Authority	The San Diego County Water Authority Emergency Storage Project increases storage of water imported from the Delta or Colorado River to be used if the imported water supplies are disrupted by a drought or catastrophe. The Emergency Storage Project includes construction of the new Olivenhain Reservoir, expansion of San Vincente Reservoir and Reservoir, pipelines to connect Olivenhain and San Vincente reservoirs to the Second Aqueduct. The water facilities for the Emergency Storage Project were under construction from 2000 to late 2014 (San Diego County Water Authority 2019).
Financial Assistance Programs for Wastewater and Water Facilities for Small Communities	SWRCB and Department of Public Health	SWRCB Resolution No. 200800048 includes the Small Community Wastewater Strategy to assist small and/or disadvantaged communities with wastewater needs for training and funding. The Small Community Wastewater Grant Program and Clean Water State Revolving Fund Program provide grants, low-interest loans and bonds for construction of wastewater facilities. The Department of Public Health Drinking Water State Revolving Fund provides grants and low- interest loans for disadvantaged and small communities. On February 19, 2013 the SWRCB approved a streamlined process.
Groundwater Ambient Monitoring and Assessment Program	SWRCB, Central Valley RWQCB, and Department of Public Health	The SWRCB and/or Central Valley RWQCB have an ongoing program to establish water quality objectives to protect beneficial uses of surface water and groundwater. Existing programs have focused on hazardous substances from landfills, waste disposal sites, fuel storage, and industrial facilities. The Groundwater Ambient Monitoring and Assessment program has been implemented to identify emerging pollutants and other constituents that affect drinking water quality. Currently, there is only one subbasin in the Central Valley that is under study as priority basin (western San Joaquin Valley near Tracy). This program is being coordinated with the Department of Public Health California Drinking Water Source Assessment and Protection program that provides information to water users. Information from these programs is used by these agencies to establish cleanup programs to protect groundwater quality.
Delta Water Supply Project	City of Stockton	The Delta Water Supply Project would develop a new supplemental water supply for the Stockton Metropolitan Area by diverting water from the Delta and conveying it through a pipeline to a surface water treatment plant, where it would be treated to the highest drinking water standards and distributed. Initially, the project would have the capacity to treat and deliver up to 30 mgd or 33,600 AF per year, meeting approximately one third of Stockton's water needs. Construction of the intake and pump station facility along with the water treatment plant and associated pipelines were completed in 2013 (CNRA 2015a).
Folsom Dam Safety and Flood Damage Reduction Joint Federal Project	Reclamation, U.S. Army Corps of Engineers (USACE), Sacramento Area Flood Control Agency, and Central Valley Flood Protection Board	The project represents a coordinated effort among Reclamation and USACE to address dam safety and enhanced flood control at Folsom Dam. The project includes the Joint Federal Project Auxiliary Spillway, seismic improvements to the Main Concrete Dam and Mormon Island Auxiliary Dam, static improvements to earthen structures, security upgrades, replacement of the Main Concrete Dam spillway gates, and a 3.5-foot raise to all Folsom Facility structures. Construction on the auxiliary spillway began in 2008 and was completed in 2017 (Reclamation 2019). The modifications to the dam allow for the release of water sooner than was possible, with the potential for higher releases should the downstream levees be improved to accommodate the increased flows. These larger, earlier releases from Folsom Reservoir create and conserve flood storage space based on projected reservoir inflows resulting from a major storm impacting the upper American River watershed. However, the modifications are operated using existing criteria until the completion of a revised Folsom Water Control manual and supporting supplemental environmental compliance documentation. The manual would be completed one year prior to completion of proposed structural modifications at Folsom Dam and Reservoir, at which time the full potential benefits of the proposed modifications would be realized.
Delta-Mendota Canal/California Aqueduct Intertie	Reclamation	The Delta-Mendota Canal/California Aqueduct Intertie consists of constructing and operating a pumping plant and pipeline connection between the Delta-Mendota Canal (DMC) and the California Aqueduct. The Intertie, which is now operational, is used to achieve multiple benefits, including meeting current water supply demands, allowing for the maintenance and repair of the CVP Delta export and conveyance facilities, and providing operational flexibility to respond to emergencies related to both the CVP and the State Water Project. The Intertie includes a 450-cfs pumping plant at the DMC that allows up to 400 cfs to be pumped from the DMC to the California Aqueduct via an underground pipeline. The additional 400 cfs allows the Jones Pumping Plant to pump to its authorized amount of 4,600 cfs. Because the California Aqueduct is located approximately 50 feet higher in elevation than the DMC, up to 900 cfs flow can be conveyed from the California Aqueduct to the DMC using gravity flow. The Intertie is owned by the federal government and operated by the SLDMWA. An agreement among Reclamation, DWR, and SLDMWA identifies the responsibilities and procedures for operating the Intertie.

Project	Primary Agencies	Description
Riverside-Corona Feeder Conjunctive Use Project	Western Municipal Water District and Reclamation	The Riverside-Corona Feeder Conjunctive Use Project will deliver water from the San Bernardino Groundwater Basin Areas to communities throughout western Riverside and San Bernardino counties and the cities of San Bernardino, Colton, Rialto, Grand Terrace, and Riverside during drought and emergency periods. The project will connect local groundwater basins to allow regional management and distribution of groundwater and connect the Chino Desalter Phase 3 project (described below) into the regional system. This project was initially evaluated in 2005. A Final Supplemental EIR/EIS for the Riverside-Corona Feeder Pipeline was completed in February 2012. The project includes the Bunker Hill groundwater extraction facility and the feeder pipeline. The Supplemental EIR/EIS evaluated the No Action Alternative/No Project Alternative and four alternative pipeline alignments to deliver up to 40,000 AF/year. The alignment alternatives include connections to Jurupa Community Services District and to the existing San Bernardino Valley Municipal Water District inland and central feeders to provide flexibility and facilitate connections to provide regional water management.
South Bay Aqueduct Improvement and Enlargement Project	Zone 7 Water Agency and DWR	The South Bay Aqueduct Improvement and Enlargement Project improved and expanded the existing South Bay Aqueduct. The project increased the existing capacity of the water conveyance system up to its design capacity of 300 cfs and expand capacity in a portion of the project to add 130 cfs (total of 430 cfs). These improvements assist Zone 7 in meeting its future conveyance capacity needs and allow DWR to reduce State Water Project peak power consumption by providing for variation in pumping and delivery schedule. The enlargement project supply Zone 7's future Altamont Water Treatment Plant with additional SWP water. The enlarged South Bay Aqueduct carries an additional 130 cfs through Reach 1, and 80 cfs through reaches 2 and 4.Construction of the enlargement project was completed in 2014.
Senate Bill X7-7: Water Conservation Act of 2009	California State Administration	The administration will expand existing programs to provide technical assistance, shared data and information, and incentives to urban and agricultural local and regional water agencies, as well as local governmental agencies, to promote agricultural and urban water conservation in excess of the amounts envisioned by SBX7 7. They will work collaboratively with stakeholders to identify and remove impediments to achieving statewide conservation targets, recycling and stormwater goals; to evaluate and update targets for additional water use efficiency, including consideration of expanding the 20 percent by 2020 targets by holding total urban water consumption at 2000 levels until 2030, achieving even greater per capita reductions in water use. The administration will also work with local and regional entities to develop performance measures to evaluate agricultural water management.
Various Water Conservation Programs	California local agencies	Local agencies are increasingly conserving water by prohibiting certain types of wasteful water use. Examples include: prohibiting watering hard surfaces such as sidewalks, walkways, driveways or parking areas; prohibiting outdoor watering during periods of rain; and not serving water to customers in restaurants unless specifically requested. Local agencies are also pioneering incentive programs, for example, converting lawns to drought tolerant landscapes—and programs to capture rainwater.
Ecosystem Improvement Projects and Actions		
Yolo County Habitat/Natural Community Conservation Plan and Yolo Local Conservation Plan	Yolo Habitat Conservancy	The Yolo Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) and Yolo Local Conservation Plan were formerly known as the Yolo Natural Heritage Program. The Yolo HCP/NCCP covers 12 endangered and threatened species and 15 natural communities, enabling agencies to construct projects and implement activities that affect the habitat of the covered species, and establishes a framework to protect, enhance, and restore natural resources within Yolo County. The Yolo Local Conservation Plan expands on the Yolo HCP/NCCP to cover species and natural communities of local concern not included in the Yolo HCP/NCCP (Yolo Habitat Conservancy 2016). Covered activities include ongoing operation and maintenance of existing flood control facilities and implementation of habitat enhancement, restoration, and creation actions included in the Yolo HCP/NCCP Conservation Strategy. The Final Yolo HCP/NCCP and Final EIS/EIR were completed in April 2018.
California EcoRestore	CNRA	California EcoRestore is an initiative by CNRA to coordinate and advance habitat restoration for at least 30,000 acres by 2019 (CNRA 2015b, 2015c). This acreage includes 25,000 acres of habitat restoration identified in the 2008 USFWS BO and 2009 NMFS BO, and 5,000 acres of habitat enhancements. Some of these programs would be funded by federal and state water agencies that are required to mitigate impacts of the CVP and SWP. Other programs would be sponsored by a combination of funds from state bonds (Proposition 1 and 1E), Assembly Bill 32 Greenhouse Gas Reduction Fund, federal agencies, local agencies, and private investments. The California Delta Conservancy will lead implementation of identified restoration projects in collaboration with local governments and with a priority on using public lands in the Delta. Many of the programs to be implemented under California EcoRestore in Suisun Marsh, Yolo Bypass, and Cache Slough are discussed separately under the No Action Alternative and cumulative effects in this EIS.

Project	Primary Agencies	Description
North Delta Flood Control and Ecosystem Restoration Project	DWR	The North Delta Flood Control and Ecosystem Restoration Project is proposed near the confluence of the Cosumnes and Mokelumne rivers by the DWR and encompasses approximately 197 square miles. Consistent with objectives contained in the CALFED ROD, the project is intended to improve flood management and provide ecosystem benefits in the North Delta area through actions such as construction of setback levees and configuration of flood bypass areas to create quality habitat for species of concern. These actions are focused on McCormack-Williamson Tract and Staten Island. The project would implement flood control improvements in a manner that benefits aquatic and terrestrial habitats, species, and ecological processes. Flood control improvements are needed to reduce damage to land uses, infrastructure, and the Bay-Delta ecosystem resulting from overflows caused by insufficient channel capacities and catastrophic levee failures in the 197 square-mile project study area. The proposed project as described in the Final EIR (DWR 2010a) included: portions of the levee system degraded to allow controlled flow across McCormack-Williamson Tract; levee modification to mitigate hydraulic impacts; channel dredging to increase flood conveyance capacity; an off-channel detention basin on Staten Island; ecosystem restoration where floodplain forests and marshes would be developed at McCormack-Williamson Tract and the Grizzly Slough property; setback levee on Staten Island to expand the floodway conveyance; and opening up the southern portion of McCormack-Williamson Tract to boating; improving Delta Meadows property; providing access and interpretive kiosks for wildlife viewing; and providing restroom, circulation, parking, and signage infrastructure to support such uses.
Franks Tract Project	Reclamation, DWR	CDFW and partners are proposing to restore about 1,000 acres of Franks Tract to tidal marsh. The proposed restoration could shrink waterweeds, grow fish food, create habitat for Delta smelt and other declining pelagic species, and prevent salinity intrusion into the south Delta. If approved for further development, the Franks Tract restoration proposal would enter a detailed phase of planning, design, and environmental review with a target end date of December 2020 (CDFW 2018a).
East Alameda County Conservation Strategy	Alameda County	The East Alameda County Conservation Strategy (EACCS) is intended to preserve endangered species with a plan for long term habitat protection. The EACCS assesses the conservation value of East Alameda County to establish biological principles for conservation in that area. The EACCS provides a framework for regional conservation of biological species, streamline the environmental permitting process, provides guidance to project proponents, and facilitate ongoing conservation programs. The EACCS identifies land suitable for voluntary mitigation or conservation, mitigation ratios, standards for habitat restorations, best management and maintenance practices for conservation sites, monitoring standards, and guidelines for adaptive management. The Final East Alameda County Conservation Strategy was completed in October 2010 (East Alameda County Conservation Strategy Steering Committee 2010).
Egeria Densa Control Program	California Department of Boating and Waterways	The Egeria Densa Control Program (EDCP) is part of the Department of Boating and Waterway's (DBW) Aquatic Pest Control Program. Cal Boating has operated the EDCP in the Delta, and its tributaries, since program inception in 2001. The program was developed in order to respond to 1997 State legislation (Rainey, Assembly Bill 2193), authorizing the program. A Final EIR was published for the program in 2001. A second addendum to the 2001 EIR was published in January 2006, with 5-year program review and future operations plan. In June 2007, NMFS analyzed the potential effects of continued implementation of the EDCP on listed salmonids and Green Sturgeon and issued a Biological Opinion continuation of the program for 5 years (2007 through 2011). DBW received the Section 7, Biological Opinion from USFWS along with a letter of concurrence from NMFS in May 2013. Both documents were valid until 2017 (CDPR 2014). The program includes treatment with herbicides, environmental monitoring, regulatory compliance, and surveillance.
Arundo Control and Restoration Program	DWR	The Arundo Control and Restoration Program is part of the larger Delta Ecosystem Enhancement Program operated by DWR. *Arundo donax* is an invasive species that is devastating the Delta riparian habitat. The Arundo Control and Restoration Program aims to develop expertise in Arundo control, effective restoration techniques in the controlled areas, resources requirements, and landowner contacts to solicit their cooperation (DWR 2019b). As of 2019, the project is currently active.
Solano County Habitat Restoration Partnership	DWR, Solano Resource Conservation District (RCD), Dixon RCD, Reclamation District 2068, 2098, and 501F	The Solano County Habitat Restoration Partnership is part of the larger Delta Ecosystem Enhancement Program. The program has eradicated or heavily controlled non-native invasive plants Arundo and red sesbania in over 60 miles of levees and canals. In addition, the program has improved water quality, soil structure, and habitat in Hastings Cut by installing a cattle exclusion fence that prevents grazing cattle from entering. As of 2019, DWR is continuing their efforts to grade and plant native grasses in order to further utilize drainage canals for plant and wildlife corridors (DWR 2019c).
Decker Island Habitat Development	DWR	The Decker Island Habitat Development Project has two goals: excavate 600,000 cubic yards of material to use for levee improvements at Sherman and Twitchell islands and create channels from the removed material for shallow water habitat and providing water to the interior of the project site for planted trees and vegetation (DWR 2019d). Habitat management tasks also include detection and control of exotic plant species. As of 2019, the project has been completed; however, long-term maintenance and monitoring is ongoing.
Water Hyacinth Control Program	California Department of Boating and Waterways	The Water Hyacinth Control Program is part of DBW's Aquatic Pest Control Program. DBW has operated the Water Hyacinth Control Program in the Delta, and its tributaries, since program inception. In 1982, state legislation made DBW the lead agency for the control of water hyacinth in the Delta, its tributaries and the Suisun Marsh. The initial control plan used both short- and- long term methods that involved chemical, mechanical, and biological control measures. The primary and most successful control measure is chemical spraying. Permits for the program were obtained in 2001. DWB published a Final Programmatic Environmental Impact Report in 2009. The selected alternative is continuation of the program.

Project	Primary Agencies	Description
Private Lands Incentive Programs	CDFW	DFW manages the California Waterfowl Habitat Program (Presley Program), a multi-faceted wetland incentive program designed to improve habitat for waterfowl on private lands. Consistent with its primary waterfowl habitat objectives, the program also endeavors to enhance habitat for shorebirds, wading birds, and other wetland-dependent species. The program pays private landowners $20/acre ($30/acre in the Tulare Basin) annually for a 10-year duration to implement habitat practices in accordance with a detailed management plan. In cooperation with Wildlife Conservation Board's Inland Wetland Conservation Program, DFW also administers the Permanent Wetland Easement Program that pays willing landowners approximately 50-70% of their property's fair market value to purchase the farming and development rights in perpetuity. Landowner retains many rights including: trespass rights, the right to hunt and/or operate a hunting club, and the ability to pursue other types of undeveloped recreation (fishing, hiking, etc.). Easement landowners are required to follow a cooperatively developed wetland management plan. DFW also administers the Landowner Incentive Program funded by USFWS to annual incentive payments to landowners to enhance and manage their lands to protect wetlands, native grasslands, and riparian habitat. The Lands Incentive Program now has two phases. Phase 1 promotes management of California's newly restored wetland, riparian, and native grassland habitats on private lands. Phase 2 actively restores and manages riparian buffers on working agricultural lands (CDFW 2015).
Grizzly Island Wildlife Area Land Management Plan	CDFW	The Grizzly Island Wildlife Area Land Management Plan was released in January 1989. The plans purpose was to guide efforts over 1988 – 1993 to guide the Department of Fish and Wildlife budget preparation and operation of the area.
Invasive Species Program	CDFW	The Invasive Species Program participates on efforts to prevent the introduction of non-native invasive species in California, detect and respond to introductions when they occur, and prevent the spread of non-native invasive species that have become established. Program activities include development of the California Aquatic Invasive Species Management Plan, the Marine Invasive Species Monitoring Program, and informational and education activities for quagga/zebra mussels, New Zealand mudsnails, northern pike (in Lake Davis), and dwarf eelgrass.
California Aquatic Invasive Species Management Plan	CDFW	The California Aquatic Invasive Species Management Plan (CAISMP) was released in January 2008. The plan's overall goal is to identify the steps that need to be taken to minimize the harmful ecological, economic, and human health impacts of aquatic invasive species in California. This plan provides the state's first comprehensive, coordinated effort to prevent new invasions, minimize impacts from established aquatic invasive species and establish priorities for action statewide. In addition, it proposes a process for annual plan evaluation and improvement so that aquatic invasive species can continue to be managed in the most efficient manner in the future. Eight major objectives and 163 actions were identified in the CAISMP.
Aquatic Invasive Species Draft California Rapid Response Plan	CDFW	The CAISMP (described above) proposes an Aquatic Invasive Species Rapid Response Plan for the State of California. The Rapid Response Plan establishes a draft general procedure for rapid response following detection of new aquatic invasive species infestation. It provides a framework for developing and implementing a rapid response plan. It is preliminary in that it describes types of information, resources and decisions necessary to finalize the plan. In order to finalize, fund, and implement the draft Rapid Response Plan, CDFW expects that cooperating agencies will assign staff to participate. CDFW Invasive Species Program staff will provide coordination for the interagency activities called for in the agreement(s).
Zebra Mussel Rapid Watch Program and Response Plan for California	CDFW, DWR, and California State Lands Commission	As part of the Zebra Mussel Early-Detection Monitoring and Outreach Program and the California Zebra Mussel Watch Program, this rapid response plan was developed to outline necessary actions and resources needed to respond to confirmed introductions of zebra mussels into the state. The plan outlines available options for eradication and/or control of zebra mussels (and quagga mussels) and provides guidance for resource managers and agency personnel. The plan includes a list of potential zebra mussel infestation scenarios with possible treatment and post-treatment monitoring techniques. The Zebra Mussel Rapid Response Plan for California is a working document that requires additional information (which will be incorporated as it becomes available) regarding funding sources, permitting requirements, specific roles of agency personnel, legal information, and infestation site specific information. The draft plan will serve as the template for a statewide plan that staff from DWR will continue to develop.
Fish Screen and Passage Program	CDFW	Under the Fish Screen and Fish Passage Program, CDFW conducts inventories of all screened and unscreened diversions and fish passage problems via site visits and gathers information on the size and number of diversions at each site and presence of existing fish protective facilities. CDFW performs the following activities: 1) inventory of water diversion and fish passage problems; 2) evaluation and prioritization of fish screening and fish passage problems; 3) implementation and coordination of fish protection activities; 4) evaluation of existing and proposed fish protective installations; and 5) review of fish screening and fish passage literature. In addition, it maintains a database that is fairly comprehensive for the Central Valley streams (Sacramento and San Joaquin Rivers systems).
Fish Passage Improvement Program	DWR	Since 1999, DWR's Fish Passage Improvement Program has worked to re-open streams and rivers to migratory fishes. The program summarizes, describes, and identifies anadromous fish passage impediments and possible solutions by addressing the problem of fish passage barriers. Through the program's individual projects, and collaboration with others, DWR improves fish passage at these structures by modifying or removing them (DWR 2019e).
Delta-Bay Enhanced Enforcement Program	CDFW	The Delta-Bay Enhanced Enforcement was initiated in 1991 through the Four Pumps Agreement between CDFW and DWR (funded by the State Water Project Contractors). In 1994, Reclamation began funding additional warden positions. The program provides increased enforcement to reduce illegal harvest of species in the San Francisco Bay and Delta, upstream into the Sacramento and San Joaquin basins. In 2008, the program had 10 wardens that focused enforcement efforts to protect Steelhead and salmon, as well as other anadromous species of concern. Funds support the addition of 17 field wardens and 5 supervisory and support staff. In the Sacramento Basin, the program targets enforcement during the spring-run Chinook salmon migration and summer holding period.

Project	Primary Agencies	Description
Ecosystem Restoration Program Conservation Strategy	CDFW	The Ecosystem Restoration Program (ERP) is a multi-agency effort aimed at improving and increasing aquatic and terrestrial habitats and ecological function in the Delta and its tributaries. The ERP Focus Area includes the Delta, Suisun Bay, the Sacramento River below Shasta Dam, the San Joaquin River below the confluence with the Merced River, and their major tributary watersheds directly connected to the Bay-Delta system below major dams and reservoirs. Principal participants overseeing the ERP are CDFW, USFWS, and NMFS, collectively known as the ERP Implementing Agencies. The ERP implements restoration projects through grants administered by the ERP Grants Program. The vast majority of these projects focus on fish passage issues, species assessment, ecological processes, environmental water quality, or habitat restoration. The ERP is guided by the following six strategic goals: • Recover endangered and other at-risk species and native biotic communities; • Rehabilitate ecological processes; • Maintain or enhance harvested species populations; • Protect and restore habitats; • Prevent the establishment of and reduce impacts from non- native invasive species; and Improve or maintain water and sediment quality.
Fremont Landing Conservation Bank	CDFW	The project is the restoration, enhancement, and preservation of 100 acres of habitat for the federally and state listed Chinook salmon and Central Valley Steelhead at Fremont Landing Conservation Bank site. Construction of the Fremont Landing Conservation Bank was completed and the Banks successfully met performance standards for the final year of monitoring in 2018 (Wildlands 2018). The project preserves and enhances 40 acres of existing riparian and wetland habitat and restores/creates 60 acres of riparian woodland and wetland sloughs within the floodplain of the Sacramento River. Three borrow pits are connected to the Sacramento River in order to reduce/eliminate fish stranding. The project also includes preservation and restoration of shaded riverine aquatic habitat and placement of large woody debris along the Sacramento River.
Fish Screen Project at Sherman and Twitchell Islands	CDFW and DWR	The project proposes to place five self-cleaning, retractable fish screens at intake siphons located on Sherman Island and Twitchell Island in order to reduce potential entrainment of Delta Smelt and other fish species by agricultural diversions. The Mitigated Negative Declaration (MND) was released in March 2016 (DWR 2016).
Lower Sherman Island Wildlife Area (LSIWA) Land Management Plan (LMP)	CDFW	The Lower Sherman Island Wildlife Area occupies roughly 3,100 acres, primarily marsh and open water, at the confluence of the Sacramento and San Joaquin Rivers in the western Delta. This extensive tract of natural vegetation and Delta waters provides diverse and valuable wildlife habitats and related recreational opportunities and is integral to the functioning and human use of the Delta. The mission of CDFW is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The LMP is consistent with that mission. The purpose of the LMP is to: (1) guide management of habitats, species, and programs described in the LMP to achieve CDFW's mission to protect and enhance wildlife values; (2) serve as a guide for appropriate public uses of the LSIWA; (3) serve as descriptive inventory of fish, wildlife, and native plant habitats that occur on or use the LSIWA; (4) provide an overview of the property's operation and maintenance and of the personnel requirements associated with implementing management goals (this LMP also serves as a budget planning aid for annual regional budget preparation); and (5) present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of potential and actual environmental impacts that may occur during plan management, and identify mitigation measures to avoid or lessen these impacts. The final Land Management Plan was released in April 2007 (CDFG 2007).
Yolo Bypass Wildlife Area Land Management Plan	CDFW	The Yolo Bypass Wildlife Area comprises approximately 16,770 acres of managed wildlife habitat and agricultural land within the Yolo Bypass. The bypass conveys seasonal high flows from the Sacramento River to help control river stage and protect the cities of Sacramento, West Sacramento, and Davis and other local communities, farms, and lands from flooding. Substantial environmental, social and economic benefits are provided by the Yolo Bypass, benefiting the people of the State of California. The stated purposes of the Yolo Bypass Wildlife Area Land Management Plan are to: (1) guide the management of habitats, species, appropriate public use, and programs to achieve CDFW's mission; (2) direct an ecosystem approach to managing the Yolo Bypass Wildlife Area in coordination with the objectives of the CALFED ERP; (3) identify and guide appropriate, compatible public-use opportunities within the Yolo Bypass Wildlife Area; (4) direct the management of the Yolo Bypass Wildlife Area in a manner that promotes cooperative relationships with adjoining private-property owners; (5) establish a descriptive inventory of the sites and the wildlife and plant resources that occur in the Yolo Bypass Wildlife Area; (6) provide an overview of the Yolo Bypass Wildlife Area's operation, maintenance, and personnel requirements to implement management goals, and serve as a planning aid for preparation of the annual budget for the Bay-Delta Region (Region 3); and (7) present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of potential and actual environmental impacts that may occur during plan management, and identify mitigation measures to avoid or lessen these impact. The final Land Management Plan was released in June 2008 (CDFG 2008).
Staten Island Wildlife-Friendly Farming Demonstration	CDFW	Acquisition and restoration of Staten Island (9,269 acres) to protect critical agricultural wetlands used by waterfowl and Sandhill cranes. Phase II of this project is to improve wildlife- friendly agriculture to foster recovery of at-risk species and to investigate effects of agriculture on water quality. This project acts as a demonstration for wildlife friendly agriculture practices and will increase habitat availability by allowing 2,500- 5,000 acres of corn to be flooded for a longer duration than is presently possible. Also, the project helps to determine the effect of winter flooding strategies on target bird species, namely greater sandhill crane and northern pintail (Delta EMZ).

Project	Primary Agencies	Description
Population Biology, Life History, Distribution, and Environmental Optima of Green Sturgeon	CDFW	This project is conducting telemetric, physiological, reproductive, and genetic studies to provide state and federal agencies such as NMFS and CDFW with information on the size of the population and its critical habitat within the Sacramento-San Joaquin watershed to inform the development of a recovery plan for the species. The distribution of spawning adults and juveniles will be continuously monitored using automated listening stations situated throughout the Sacramento River, Delta, and San Francisco Bay Estuary. The project will also characterize the environment where adult Green Sturgeon are found to spawn (Ecosystem Restoration Program N.d.).
Operations as for Listing of Longfin Smelt under CESA	California Fish and Wildlife Commission	Despite the fact that OAL has not "finalized" its proposed changes in regulations in code, CDFW operates in accordance with the longfin being listed as threatened. In fact, CDFW has issued DWR a 2081 permit authorizing take of this threatened species (CDFW 2018b).
Hatchery and Stocking Program	CDFW and USFWS	CDFW operates a statewide system of fish hatchery facilities that rear and subsequently release millions of trout, salmon, and Steelhead of various age and size classes into state waters. These fish are reared and released for recreational and commercial fishing, for conservation and restoration of fish species that are native to California waters, for mitigation of habitat losses caused by construction of dams on the state's major rivers, and for mitigation of fish lost at state-operated pumping facilities in the Delta. CDFW's Hatchery Program includes: • operation of 14 trout hatchery facilities owned by CDFW and the related stocking of fish, • operation of eight salmon and Steelhead hatchery facilities owned by others and the related stocking of fish, • operation of two salmon and Steelhead hatchery facilities owned by CDFW and the related stocking of fish, • providing education staff and fish for stocking under the Fishing in the City program, • issuing authorizations and providing fish eggs for the Classroom Aquarium Education Project (CAEP) • issuing permits for stocking public and private waters with fish reared at private aquaculture facilities, • implementing the fish production and native trout conservation requirements contained in California Fish and Game Code Section 13007. The fundamental objectives of CDFW's Hatchery Program are to continue the rearing and stocking of fish from its existing hatchery facilities for the recreational use of anglers, for mitigation of habitat loss due to dam construction and blocked access to upstream spawning areas, for mitigation of fish losses caused by operation of the state-operated Delta pumps, and for conservation and species restoration.
Hatchery and Stocking Program Proposed Changes	CDFW and USFWS	CDFW has been rearing and stocking fish in the inland waters of California since the late 1800s. CDFW currently stocks trout in high mountain lakes, low elevation reservoirs, and various streams and creeks throughout California. Salmon have been planted mostly in rivers and direct tributaries to the Pacific Ocean, with the exception of inland kokanee, Coho, and Chinook salmon populations that have been planted in reservoirs for recreational fishing. In 2006, a lawsuit was filed against CDFW claiming that CDFW's fish stocking operation did not comply with CEQA. In July 2007, CDFW was ordered by the Sacramento Superior Court to comply with CEQA regarding its fish stocking operations. CDFW completed a Final EIR to comply with the court order in July 2010 (CDFG and USFWS 2010). The USFWS served as the co-lead for the joint EIR/EIS.
Watercraft Inspection Programs	CDFW, California Department of Food and Agriculture, California State Parks	Several local boat and watercraft inspection programs have been initiated to prevent the spread of invasive species such as quagga mussels. Since early 2007, more than 150,000 watercraft have been inspected at CDFA's Border Protection Stations. Pests have been detected on nearly 200 occasions. Another 14,000 watercraft were cleaned and/or drained of all water that could harbor the mussels. The inspections are ongoing. After quagga mussels were detected in 2007 in the Colorado River, funding was granted to enable the California Department of Food and Agriculture (CDFA) to inspect watercraft at six border stations along the Nevada and Arizona borders: Truckee, Needles, Winterhaven, Blythe, Yermo and Vidal. When exotic mussels are detected by CDFA inspectors, the watercraft are cleaned and the owners issued a quarantine notice prohibiting the craft from entering California waters until a final inspection is conducted by CDFW. CDFW conducts boat inspection training and activities around the state and has initiated inspections at several water bodies.
Suisun Marsh Habitat Management, Preservation, and Restoration Plan	CDFW, USFWS, Reclamation, and Suisun Marsh Charter Group	The Suisun Marsh Charter Group, a collaboration of federal, state, and local agencies with primary responsibility in Suisun Marsh, completed the Suisun Marsh Habitat Management, Preservation, and Restoration Plan in 2014. The plan balances implementation of the CALFED Program, the Suisun Marsh Preservation Agreement, and other management and restoration programs within the Suisun Marsh in a manner that is based upon voluntary participation by private landowners and that responds to the concerns of stakeholders. Charter agencies include Reclamation, DWR, USFWS, Suisun Resource Conservation District, and other agencies. The Charter Group developed a regional plan that outlines the actions needed in Suisun Marsh to preserve and enhance managed seasonal wetlands, restore tidal marsh habitat, implement a comprehensive levee protection/improvement program, and protect ecosystem and drinking water quality. The proposed plan is consistent with the goals and objectives of the Bay-Delta Program and balances those goals and objectives with the Suisun Marsh Preservation Agreement and federal and state endangered species programs within the Suisun Marsh. The Suisun Marsh Plan also provides for simultaneous protections and enhancement of: 1) existing wildlife values in managed wetlands, 2) endangered species, 3) tidal marshes and other ecosystems, and 4) water quality, including, but not limited to, the maintenance and improvement of levees (CDFW 2018b).
Central Valley Vision	California State Parks	In 2003, California State Parks began work on a long-term Central Valley Vision to develop a strategic plan for State Parks expansion in the Central Valley. In 2009, California State Parks completed the Central Valley Vision Implementation Plan (California State Parks 2009). The plan provides a 20-year road map for State Park actions to focus on increasing service to Valley residents and visitors. Within the Great Central Valley (San Joaquin Valley, Sacramento Valley and the Delta region), California State Parks operates and maintains 32 state park units representing 7% of the total state park system acreage. Plans include: Delta Meadows River Park, Brannon Island SRA, Franks Track SRA, Locke Boarding House, and San Joaquin and Sacramento Rivers.

Project	Primary Agencies	Description
Central Valley Flood Management Planning (CVFMP) Program	DWR	DWR launched the CVFMP program in 2008 to improve integrated flood management in California's Central Valley. The CVFMP program efforts include the preparation of the Central Valley Flood Protection Plan (CVFPP) to fulfill the requirements of the Central Valley Flood Protection Act of 2008. A guidance document was adopted in 2012, and subsequently updated in August 2017 (DWR 2017). The document is scheduled to be updated every five years. The Lower Elkhorn Basin Levee Setback Project is the first phase of implementation of recommendations from the 2012 CVFPP. The Final EIR was certified in June 2019.
Clifton Court Forebay Fishing Facility	DWR	The Clifton Court Forebay Fishing Facility consists of installing a fishing pier into Clifton Court Forebay, a staging area, concrete pad and retaining wall, security fencing, and gates, Americans with Disabilities Act (ADA)-compliant public restroom, bicycle rack, equipment shed, ADA compliant boat dock and road section on West Canal, two ADA compliant parking spaces next to the public entrance gate, and lighting and signage. The Initial Study and Mitigated Negative Declaration (IS/MND) was circulated for public review in June 2013 (Reclamation 2013).
Delta Levees Flood Protection Program	DWR	The Bay-Delta Levees Branch of DWR administers the Delta Levees Flood Protection Program as authorized by the California Water Code, Sections 12300 thru 12318 and 12980 thru 12995. This is a grants program that works with more than 60 reclamation districts in the Delta and Suisun Marsh to maintain and improve the flood control system and provide protection to public and private investments in the Delta including water supply, habitat, and wildlife. The program, through its two major components (Delta Levees Maintenance Subventions Program and Delta Levees Special Flood Control Projects), works with the local agencies to maintain, plan, and complete levee rehabilitation projects. The Delta Levees Maintenance Subventions Program provides financial assistance to local levee maintaining agencies for the maintenance and rehabilitation of non-project levees in the Delta. It has been in effect since passage of the Way Bill in 1973, which has been modified periodically by legislation. The program is under the authority of the Central Valley Flood Protection Board (Board) and is managed by DWR. Water Code Section 12987 calls on DWR to prioritize the islands for receipt of grant funds through the program and recommend the prioritization to the Board. The Board reviews and approves the Department's recommendation and enters into an agreement with reclamation districts to reimburse eligible costs. The Delta Levees Special Flood Control Projects provides financial assistance to local levee maintaining agencies for rehabilitation of levees in the Delta. The program was established by the California Legislature under SB 34, SB 1065, and AB 360. Since the inception of the program, more than $100 million have been provided to local agencies in the Delta for flood control and related habitat projects. The program presently focuses on flood control projects and related habitat projects for eight western Delta Islands (Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell and Webb Islands) and for the towns of Thornton and Walnut Grove.
Delta Risk Management Strategy	DWR	The 2000 CALFED ROD presented a Preferred Program Alternative that described actions, studies, and conditional decisions to help the Delta. The Preferred Program Alternative for Stage 1 implementation included the completion of a Delta Risk Management Strategy (DRMS) that would examine the sustainability of the Delta, and would assess major risks to Delta resources for projections ranging from 50 to 200 years. The first phase of DRMS analyzed the risks and consequences of levee failure in the Delta region. The analysis considered current and future risks of levee failures from earthquakes, high water conditions (storms and tides), climate change, subsidence, dry-weather events, and a combination of these factors. The analysis also estimated the consequences of levee failures to the local and state economy, public health and safety and the environment. The DRMS Phase 1 2009 report found that "under business-as-usual practices, the Delta region as it exists today is unsustainable". These findings will be used to help develop a set of strategies to manage levee failure risks in the Delta and to improve the management of state funding that supports levee maintenance and improvement. Phase developed risk reduction strategies to manage levee failure risks. Phase 2 data can now be used to pinpoint major irks and advise on related mitigation measures (Water Education Foundation N.d).
FloodSAFE California	DWR	In 2006, DWR initiated FloodSAFE California, which is a multi- faceted program to improve public safety through integrated flood management. Under the FloodSAFE Program, DWR provides leadership and works with local, regional, state, tribal and federal officials to improve flood management and emergency response systems throughout California, primarily by investing funds provided by Propositions 1E and 84. Although DWR is leading FloodSAFE, successful implementation of the program depends on active participation from many key partners and substantial federal and local cost participation. The FloodSAFE vision is a sustainable integrated flood management and emergency response system throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flooding. The FloodSAFE Program is designed to help improve integrated flood management statewide with a significant emphasis on the Central Valley and Delta where communities and resources face high risk of catastrophic damage. Integrated Flood Management includes recognition of: the interconnection of flood management actions within broader water resources management and land use planning, the value of coordinating across geographic and agency boundaries, the need to evaluate opportunities and potential impacts from a system perspective, and the importance of environmental stewardship and sustainability. FloodSAFE will guide the development of regional flood management plans that encourage regional cooperation in identifying and addressing flood hazards. The plans will emphasize multiple objectives, system resiliency, and compatibility with state goals and Integrated Regional Water Management Plans.

Project	Primary Agencies	Description
Levee Repair- Levee Evaluation Program	DWR	On February 24, 2006, Governor Arnold Schwarzenegger declared a State of Emergency for California's levee system, commissioning up to $500 million of state funds to repair and evaluate state/federal project levees. Following the emergency declaration, the Governor directed DWR to secure the necessary means to fast-track repairs of critical erosion sites. Hundreds of levee sites have been identified for immediate repair throughout the Central Valley. These repairs are necessary to maintain the functionality of flood control systems that have deteriorated over time and/or do not meet current design standards. While many of the most urgent repairs have been completed or are near completion, other sites of lower priority are still in progress, and still more are in the process of being identified, planned, and prioritized. In general, repairs to state/federal project levees are being conducted under three main programs: the Critical Erosion Repairs Program, the Sacramento River Bank Protection Project, and the PL84-99 Rehabilitation Program. A fourth program to repair critically damaged levees on the San Joaquin Flood Control System is under development by DWR. DWR is conducting geotechnical exploration, testing, and analysis of state and federal levees that protect the highly populated urban areas of greater Sacramento, Stockton/Lathrop, and Marysville/Yuba City. This program is being implemented simultaneously with the various urgent levee repairs. To expedite efforts to protect these communities, levee evaluations are being conducted in a fast-track manner over a two- to three-year period. During this time, technical specialists are reviewing existing levee historical data; mapping near-surface geology; conducting field explorations; performing engineering, stability and seepage analyses; and preparing preliminary design and construction estimates for repairing and upgrading the levees, where needed.
Lower Yolo Restoration Project	State and Federal Contractors Water Agency, DWR, and MOA Partners	The project is located in the lower Yolo Bypass and is a tidal and seasonal salmon habitat project restoring tidal flux to about 1,100 acres of existing pasture land. The project site includes the Yolo Ranch, also known as McCormack Ranch, which was purchased in 2007 by the Westlands Water District (WWD). The goal of this project is to provide important new sources of food and shelter for a variety of native fish species at the appropriate scale in strategic locations in addition to ensuring continued or enhanced flood protection. The Lower Yolo wetlands restoration project is part of an adaptive management approach in the Delta to learn the relative benefits of different fish habitats, quantify the production and transport of food and understand how fish species take advantage of new habitat,
Meins Landing Restoration	DWR, Suisun Marsh Preservation Agreement	The 666-acre property is currently a mosaic of managed wetlands and upland habitats. The area long used as a managed wetlands for a duck club will be restored to tidal marsh and to provide meet wetlands restoration goals of other projects, including levee improvements on Van Sickle Island.
Interagency Ecological Program (IEP)	DWR, CDFW, SWRCB, USFWS, Reclamation, Geological Survey, USACE, NMFS, and Environmental Protection Agency	The mission of the IEP is to provide information on the factors that affect ecological resources in the Sacramento-San Joaquin Estuary as a means to support more efficient management of the estuary. The program consists of 10 member agencies, three state (DWR, CDFW, and SWRCB), six federals (USFWS, Reclamation, Geological Survey, USACE, NMFS, and Environmental Protection Agency), and one non-government organization (the San Francisco Estuarine Institute). Program partners work together to develop a better understanding of the estuary's ecology and the effects of the SWP and CVP operations on the physical, chemical, and biological conditions of the San Francisco Bay-Delta estuary. Activities include data collection and analysis, evaluation of the impacts of human activities on fish and wildlife, interpretation of information and development of measures to avoid or offset impacts of water project operation and other human activities on the estuary, and assistance with planning, coordination and integration of estuarine studies by other agencies. The IEP Science Advisory Group also conducts independent scientific reviews of modeling activities and study programs in the Delta when requested. Current efforts focus on evaluation of the decline of pelagic species in the upper San Francisco Estuary. These efforts emphasize modeling and integration of results, and respond to management interests by including temperature modeling, wastewater impacts, contaminants, salvage efficiency, 3- dimensional particle tracking and individual based modeling for striped bass and longfin smelt. The ammonia work includes source, fate, and transport modeling, field studies, and a review and syntheses of data and studies on the effects of ammonia on aquatic species. The temperature work is closely coordinated with the CALFED-funded Computational Assessments of Scenarios of Change for the Delta Ecosystem (CASCaDE) project and will analyze the trends of water temperature stress zones and refugia in the Delta. The Interagency Ecological Program 2019 Annual Work Plan was released in December 2018 (Interagency Ecological Program 2018).
Mayberry Farms Subsidence Reversal and Carbon Sequestration Project	DWR	The Mayberry Farms Subsidence Reversal and Carbon Sequestration Project would create permanently flooded wetlands on a 307-acre parcel on Sherman Island that is owned by DWR. The project would restore approximately 192 acres of emergent wetlands and enhance approximately 115 acres of seasonally flooded wetlands. The Mayberry Farms project was conceived as a demonstration project that would provide subsidence reversal benefits and develop knowledge that could be used by operators of private wetlands (including duck clubs) that manage lands for waterfowl-based recreation. By maintaining permanent water, the growth and subsequent decomposition of emergent vegetation is expected to control and reverse subsidence. The project is also anticipated to provide climate benefits by sequestering atmospheric CO_2. The project is expected to provide year-round wetland habitat for waterfowl and other wildlife. Construction was completed in 2010, however several projects at the site are currently ongoing and are performed routinely by DWR (CNRA N.d.a).

Project	Primary Agencies	Description
South Delta Temporary Barriers Project	DWR	The South Delta Temporary Barriers Project, initiated as a test project in 1991, was developed partially in response to a 1982 lawsuit filed by the South Delta Water Agency. The South Delta Temporary Barriers Project consists of four rock barriers across South Delta channels. The objectives of the project are to increase water levels, improve water circulation patterns and water quality in the southern Delta for local agricultural diversions, and improve operational flexibility of the State Water Project to help reduce fishery impacts and improve fishery conditions. Of the four rock barriers, the barrier at the head of Old River serves as a fish barrier (intended to primarily benefit migrating San Joaquin River Chinook salmon) and is installed and operated in April- May and again in September-November. The remaining three barriers (Old River at Tracy, Grant Line Canal, Middle River) serve as agricultural barriers (intended to primarily benefit agricultural water users in the south Delta) and are installed and operated between April 15 and November 30 of each season. In 2008, a court order designed to protect delta smelt prohibited the installation of the spring Head of Old River barrier pending fishery agency actions or further order of the court. The remaining three barriers serve as agricultural barriers and are installed between April 15 and September 30 of each season. An experimental underwater, non-physical barrier was installed in 2009. The channel will be open to navigation.
Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project	DWR	The Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project is a multiple-year study of the effectiveness of elevating dissolved oxygen (DO) concentrations in the channel. DO concentrations drop as low as 2 to 3 milligrams per liter (mg/L) during warmer and lower water flow periods in the San Joaquin River. The low DO levels can adversely affect aquatic life including the health and migration behavior of anadromous fish (e.g., salmon). The objective of the study is to maintain DO levels above the minimum recommended levels specified in the State of California WQCP for the Sacramento River and San Joaquin River basins. The Basin Plan water quality objectives for DO are 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November) and 5.0 mg/l the remainder of the year. The project's full-scale aeration system includes two 200-foot- deep u-tube aeration tubes; two vertical turbine pumps capable of pumping over 11,000 gallons of water each; a liquid-to-gas oxygen supply system; and numerous pieces of ancillary equipment and control systems. The system has been sized to deliver approximately 10,000 pounds of oxygen per day into the Deep Water Ship Channel. The aeration system is anticipated to be operated only when channel DO levels are below the Basin Plan DO water quality objectives (approximately 100 days per year). The project study includes an ongoing assessment of DO levels in the channel and vicinity and a study of potential adverse effects of low DO on salmon. The final report was released in December 2010. (DWR 2010b).
Zebra Mussel Watch Program	DWR	The Zebra Mussel Watch Program is composed of several elements: a risk assessment, an early detection monitoring program, a centralized reporting system "How to Report a Zebra Mussel Sighting," a rapid response plan, and public outreach and education. The risk assessment involves identifying water bodies in California that have a high probability of zebra mussel establishment. High risk areas have suitable zebra mussel habitat (based on substrate type, pH, and mineral availability), appropriate water temperatures for spawning, adequate food supplies, and high levels of boating activity. Early detection monitoring is conducted at high risk rivers and reservoirs in the Central Valley watershed. Sampling consists of suspending artificial substrates in the water column to provide attachment sites for zebra mussels. The artificial substrates checked for the presence of zebra mussels every month. The monitoring is conducted by private citizens, marina staff, DWR staff, and staff from other agencies. Information is managed in a centralized system created for reporting zebra mussel sightings. In 2013, California Water Boards released a report analyzing long-term mussel trends with recommendations for future monitoring (Surface Water Ambient Monitoring Program [SWAMP] 2013).

Project	Primary Agencies	Description
Cache Slough Area Restoration	DWR and CDFW	The Cache Slough Complex is located in the northern Delta where Cache Slough and the southern Yolo Bypass meet. It currently includes Liberty Island, Little Holland Tract, Prospect Island, Little Egbert Tract and the surrounding waterways. Levee height on these tracts is restricted and designed to allow overtopping in large flow events to convey water from the upper Yolo Bypass. Since 1983 and 1998 respectively, Little Holland Tract and Liberty Island have remained breached. Restoration is occurring naturally on the islands. Restoration in the Cache Slough Complex was identified as an Interim Delta Action by Governor Schwarzenegger in July 2007 and is being evaluated through the Bay Delta Conservation Plan process. Other planning processes such as Delta Vision and the Delta Risk Management Strategy have also identified the Cache Slough Area as a potential priority restoration site. The Cache Slough Complex has potential for restoration success because of its relatively high tidal range, historic dendritic channel network, minimal subsidence, and remnant riparian and vernal pool habitat. Restoration efforts would support native species, including delta smelt, longfin smelt, Sacramento splittail, and Chinook salmon, by creating or enhancing natural habitats and improving the food web fish require. Surrounding lands that are at elevations that would function as floodplain or marsh if not separated by levees could also be included in the Cache Slough Area. This broader area includes roughly 45,000 acres of existing and potential open water, marsh, floodplain and riparian habitat. The goals of restoration in the Cache Slough Complex are to: 1) re-establish natural ecological processes and habitats to benefit native species, 2) contribute to scientific understanding of restoration ecology, and 3) maintain or improve flood safety. Three restoration actions are currently contemplated in the Cache Slough Complex, including restoration actions at Calhoun Cut, Little Holland Tract, and Prospect Island. These are briefly described in the following. **Calhoun Cut** Calhoun Cut is a manmade, excavated, east-west running channel that was originally created to improve navigation in the area. The channel initiates at the confluence of Lindsey and Barker sloughs and runs west in a straight line until it intersects the terminal portion of Lindsey Slough. Calhoun Cut adversely influences tidal action in the historic arms of Lindsey Slough. Restoration of tidal action would entail removal of features that restrict flow through the slough, excavating starter channels to initiate channel evolution and promote tidal flow, and potentially blocking Calhoun Cut to restore the tidal channel system in Lindsey Slough. **Little Holland Tract** Little Holland Tract encompasses about 1,640 acres within the Cache Slough Complex. Similar to Prospect Island, Little Holland Tract was acquired by the federal government (USACE) in anticipation of transferring ownership to the U.S. Fish and Wildlife Service as a component of a North Delta National Wildlife Refuge. The tract has been subject to tidal influence since 1983, when levees separating Little Holland Tract and the Toe Drain failed. Since that time, the site has naturally returned to a mixture of tidally influenced emergent wetlands, mudflats, and riparian habitat. Restoration actions would complement what has occurred naturally by increasing wetland values at the site.
Delta Fish Agreement (Four Pumps Project)	DWR and CDFW	The 1986 Delta Pumping Plant Fish Protection (Delta Fish) Agreement between DWR and CDFW provides a mechanism for offsetting adverse fishery impacts caused by the diversion of water at the Harvey O. Banks Delta Pumping Plant, a part of the State Water Project located at the head of the California Aqueduct. Direct losses of Chinook salmon, Steelhead, and striped bass are offset or mitigated through the funding and implementation of fish mitigation projects. DWR and CDFW work closely with the Fish Advisory Committee to implement the agreement and projects funded under the agreement. The Fish Advisory Committee is made up of representatives of the State Water Contractors, sport and commercial fishing groups, and environmental groups. The agreement was signed by the Directors of DWR and CDFW on December 30, 1986 and has been amended twice since that time. The Delta Fish Agreement is also commonly known as the Four Pumps Agreement because it was subsequently identified as mitigation for the enlargement of the Banks Pumping Plant, including four additional pumps.
Dutch Slough Tidal Marsh Restoration Project	DWR and California State Coastal Conservancy	The Dutch Slough Tidal Marsh Restoration Project, located near Oakley in Eastern Contra Costa County, would restore wetland and uplands, and provide public access to the 1,166- acre Dutch Slough property owned by DWR. The property is composed of three parcels separated by narrow man-made sloughs. The project would provide ecosystem benefits, including habitat for sensitive aquatic species. It also would be designed and implemented to maximize opportunities to assess the development of those habitats and measure ecosystem responses so that future Delta restoration projects will be more successful. Construction on two of the parcels began in May 2018 and is expected to be complete in 2019, followed by revegetation planting. Restoration of the third parcel, Burroughs, is beginning in 2020 (DWR 2018b). Two neighboring projects proposed by other agencies that are related to the Dutch Slough Restoration Project collectively contribute to meeting project objectives. These include the City of Oakley's proposed Community Park and Public Access Conceptual Master Plan for 55 acres adjacent to the wetland restoration project and four miles of levee trails on the perimeter of the DWR lands. The City Community Park will provide parking and trailheads for the public access components of the Dutch Slough Restoration Project. The Ironhouse Sanitary District is proposing the West Marsh Creek Delta Restoration Project, a restoration of a portion of the Marsh Creek delta on an adjacent 100-acre parcel it owns west of Marsh Creek. The Ironhouse Project could provide fill material for, and be linked to, the Dutch Slough Restoration lands.

Project	Primary Agencies	Description
Lower Yuba River Accord	DWR and Yuba County Water Agency	The Lower Yuba River Accord is a collaborative effort among environmental interests, fisheries agencies, and water agencies intended to resolve instream flow issues associated with operation of the Yuba Project in a way that would protect and enhance lower Yuba River fisheries and local water supply reliability. It also provides revenues for local flood control and water supply projects, improves statewide water supply reliability and provides water for protection and restoration purposes in the Delta. Local water supply reliability is achieved through implementation of a conjunctive use program. The Lower Yuba River Accord includes three separate but interrelated agreements intended to meet program objectives. The Fisheries Agreement would modify the instream flow requirements contained in SWRCB Revised Decision 1644 to provide increased flows in most months of most water years. These changes would primarily serve to improve habitat conditions for salmonids by reducing water temperatures during sensitive life stage periods. Implementation of the Yuba Accord requires appropriate SWRCB amendments of Yuba County Water Agency's (YCWA) water-right permits and RD-1644. To assure that local water supply reliability would not be reduced by the higher minimum instream flows, YCWA and its participating local water districts would implement agreements that would establish a comprehensive conjunctive use program that would integrate the surface water and groundwater supplies of the local irrigation districts and mutual water companies that YCWA serves in Yuba County. Integration of surface water and groundwater would allow YCWA to increase the efficiency of its water management. Under the Water Purchase Agreement, the California Department of Water Resources would enter into an agreement with YCWA to purchase water from YCWA for use in the Environmental Water Account (EWA) Program or an equivalent program as long as operational and hydrological conditions allow. Additional water purchased by DWR would be available for the SWP in drier years. The EWA Program would take delivery of water in every year; the SWP would receive additional water in the drier years. The final EIS/EIR was released in October 2007 (DWR, Yuba County Water Agency, and Reclamation 2007).
Upper Yuba River Studies Program	DWR, CALFED, and NMFS	In 2002, CALFED formed a stakeholder work group and initiated investigations of the feasibility of providing anadromous fish passage at Englebright Dam on the Yuba River, a dam that blocks all upstream passage of fish. A comprehensive study program, developed with the assistance of the work group, included studies to examine the availability of upstream fish habitat and the effects of a potential fish passage project on sediment storage and transport, water quality, flood risk, water supply and hydropower, and socio- economics. Initial studies focused on sediment transport and storage in the upper watershed and Englebright Lake, and habitat quality in the Middle and South Yuba rivers, particularly for spring-run Chinook salmon and Steelhead. The analyses included temperature modeling and mapping of holding pools, instream barriers, and potential spawning and rearing areas. The results of the preliminary investigations suggested that anadromous salmonids could be supported in the river upstream of Englebright Dam. In 2008, NMFS began a watershed-based habitat suitability assessment and the development of conceptual plans for engineered fish passage design alternatives to accommodate safe and timely movement of anadromous fish through or around Englebright Dam.
Riparian Habitat Joint Venture Project	California Partners In Flight	The Riparian Habitat Joint Venture (RHJV) project was initiated by California Partners in Flight in 1994. To date, 18 federal, state and private organizations have signed the Cooperative Agreement to protect and enhance habitats for native land birds throughout California. These organizations include the California Department of Fish and Wildlife, California Department of Water Resources, California State Lands Commission, Ducks Unlimited, National Audubon Society, National Fish and Wildlife Foundation, The Nature Conservancy, The Trust for Public Land, The Resources Agency State of California, Reclamation, USFWS, U.S. Geological Survey, and Wildlife Conservation Board. The RHJV, modeled after the successful Joint Venture projects of the North American Waterfowl Management Plan, reinforces other collaborative efforts currently underway that protect biodiversity and enhance natural resources as well as the human element they support. The vision of the RHJV is to restore, enhance, and protect a network of functioning riparian habitat across California to support the long-term viability of land birds and other species. A wide variety of other species of plants and animals will benefit through the protection of forests along rivers, streams and lakes. The RHJV mission is to provide leadership and guidance to promote the effective conservation and restoration of riparian habitats in California through the following goals: (1) Identify and develop technical information based on sound science for a strategic approach to conserving and restoring riparian areas in California; (2) Promote and support riparian conservation on the ground by providing guidance, technical assistance and a forum for collaboration; and (3) Develop and influence riparian policies through outreach and education. In 2004, Partners In Flight prepared The Riparian Bird Conservation Plan, a guidance document that outline a strategy for conserving riparian birds, including birds using the Delta. In 2009, a California Riparian Habitat Restoration Handbook was released and demonstrates how to approach riparian restoration design from an ecological perspective and describes the existing ecological conditions (RHJV 2009).
Delta Vision	CNRA	Delta Vision was created by Executive Order of Gov. Arnold Schwarzenegger in 2006 to find a durable vision for sustainable management of the Delta, so it could continue to support environmental and economic functions critical to the people of California. Although it builds upon work done through the CALFED Bay-Delta Program, Delta Vision broadened the focus of past Delta efforts to recommend actions that address the full array of natural resource, infrastructure, land use, and governance issues necessary to achieve a sustainable Delta. In February 2007, the Governor appointed the independent Delta Vision "Blue Ribbon" Task Force chaired by Phil Isenberg. The Task Force issued its first report, Our Vision for the California Delta, in December 2007, which identified its vision for the Delta. The Task Force issued its second report, a Strategic Plan, identified and evaluated alternative implementing measures and management practices that would be necessary to implement Delta Vision recommendations. These implementation recommendations involved considering changes in the use of land and water resources, services to be provided within the Delta, governance, funding mechanisms, and ecosystem management practices. The final Strategic Plan was submitted to the public and the Delta Vision Committee on December 31, 2008 (Delta Vision 2008).

Project	Primary Agencies	Description
Marine Invasive Species Program	California State Lands Commission	The California Marine Invasive Species Program is charged with preventing or minimizing the introduction of nonindigenous species to California Waters from commercial vessels. The program began in 1999 with the passage of California's Ballast Water Management for Control of Nonindigenous Species Act, which addressed the threat of species introductions through ships' ballast water during a time when federal regulations were not mandatory. In 2003, the Marine Invasive Species Act (MISA) was passed, reauthorizing and expanding the 1999 Act. Subsequent amendments to MISA and additional legislation have further expanded the scope of the program. The law charged the California State Lands Commission with oversight of the state's program to prevent or minimize the introduction of nonindigenous species from commercial vessels. To advance this goal, the Commission uses a comprehensive approach that includes: ballast water and vessel fouling management tracking, compliance, and enforcement; sound policy development in consultation with a wide array of experts and stakeholders; applied research that advances the strategies for nonindigenous species prevention; and outreach and education to coordinate information exchange among scientists, legislators, and stakeholders. The Coastal Ecosystems Protection Act of 2006 directed the Commission to adopt performance standards for the discharge of ballast water by January 1, 2008, and prepare a report assessing the availability of treatment technologies to meet those standards. The Commission completed the rulemaking process and adopted the standards in October 2007; the technology assessment report was completed in December 2007. In February 2019, the Commission released the 2019 Biennial Report on the Marine Invasive Species Program which summarizes and analyzes the ballast water management practices and recommendations to improve the program (California State Lands Commission 2019).
Central Valley Joint Venture Program	Central Valley Joint Venture	The Central Valley Joint Venture (CVJV) is a self-directed coalition consisting of 22 state and federal agencies and private conservation organizations. The partnership directs their efforts toward the common goal of providing for the habitat needs of migrating and resident birds in the Central Valley of California. The CVJV was established in 1988 as a regional partnership focused on the conservation of waterfowl and wetlands under the North American Waterfowl Management Plan. It has since broadened its focus to the conservation of habitats for other birds, consistent with major national and international bird conservation plans and the North American Bird Conservation Initiative. The CVJV provides guidance and facilitates grant funding to accomplish its habitat goals and objectives. Integrated bird conservation objectives for wetland habitats in the Central Valley identified in the 2006 Implementation Plan include restoration of 19,170 acres of seasonal wetland, enhancement of 2,118 acres of seasonal wetland annually, restoration of 1,208 acres of semi-permanent wetland, and restoration of 1,500 acres of riparian habitat. The Implementation Plan is currently being updated and will add additional chapters, including conservation strategies (Central Valley Joint Venture N.d).
Cache Creek, Bear Creek, Sulfur Creek, Harley Gulch Mercury TMDL	Central Valley RWQCB	Historic mining activities in the Cache Creek watershed have discharged and continue to discharge large volumes of inorganic mercury to creeks in the watershed. Much of the mercury discharged from the mines is now distributed in the creek channels and floodplain downstream from the mines. Natural erosion processes are expected to slowly move the mercury downstream out of the watershed over the next several hundred years. However, current and proposed activities in and around the creek channel can enhance mobilization of this mercury. To reduce mercury loads in these streams, which ultimately connect to the northern Delta, the Central Valley RWQCB is implementing mercury TMDLs for Cache Creek and its tributaries, as well as Sulfur Creek. The implementation plans require a reduction in mercury loads through a combination of actions to clean up mines, sediments, and wetlands; identify engineering options; control erosion reduction actions and perform studies and monitoring. In 2009, Central Valley RWQCB released the mercury inventory report for Cache Creek Canyon which evaluated the distribution of mercury in sediment in Cache Creek and identifies tributary sources of mercury to the creek (Central Valley RWQCB 2008).
Sacramento-San Joaquin Delta Estuary TMDL for Methylmercury	Central Valley RWQCB	The Central Valley RWQCB has identified the Delta as impaired because of elevated levels of methylmercury in Delta fish that pose a risk for human and wildlife consumers. As a result, it has initiated the development of a water quality attainment strategy to resolve the mercury impairment. The strategy has two components: the methylmercury total maximum daily load (TMDL) for the Delta and the amendment of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (the Basin Plan) to implement the TMDL program. The final Basin Plan amendment requires methylmercury load and waste load allocations for dischargers in the Delta and Yolo Bypass to be met as soon as possible, but no later than 2030. The regulatory mechanism to implement the Delta Mercury Control Program for point sources is through National Pollutant Discharge Elimination (NPDES) permits. Nonpoint sources are regulated in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy. Both point and nonpoint source dischargers are required to conduct mercury and methylmercury control studies to develop and evaluate management practices to control mercury and methylmercury discharges. The RWQCB uses the study results and other information to amend relevant portions of the Delta Mercury Control Program during the Delta Mercury Control Program Review. The final Basin Plan amendment also requires proponents of new wetland and wetland restoration projects scheduled for construction after 2011 to either participate in a comprehensive study plan or implement a site-specific study plan, evaluate practices to minimize methylmercury discharges, and implement newly developed management practices as feasible. Projects would be required to include monitoring to demonstrate effectiveness of management practices. In 2017, an update to the Delta Mercury Control Program and TMDL was released (Central Valley RWQCB 2017).

Project	Primary Agencies	Description
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan	Contra Costa County and East Contra Costa County Habitat Conservancy	The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (Plan) was adopted in 2006 and provides regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for endangered species and wetland regulations. The Plan was developed by a team of scientists and planners with input from independent panels of science reviewers and stakeholders. Within the 174,018-acre inventory area, the Plan provides permits for between 8,670 and 11,853 acres of development and will permit impacts on an additional 1,126 acres from rural infrastructure projects. The Plan will result in the acquisition of a preserve system that will encompass 23,800 to 30,300 acres of land that will be managed for the benefit of 28 species as well as the natural communities that they depend upon. The East Contra Costa County Habitat Conservancy is a joint exercise of powers authority formed by Contra Costa County and the cities of Brentwood, Clayton, Oakley and Pittsburg to implement the Plan. It allows Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District and the cities of Brentwood, Clayton, Oakley, and Pittsburg (collectively, the Permittees) to control permitting for activities and projects they perform or approve in the region that have the potential to adversely affect state- and federally listed species. The Plan also provides for comprehensive species, wetlands, and ecosystem conservation and contributes to the recovery of endangered species in northern California. The Plan avoids project-by-project permitting that often results in uncoordinated and biologically ineffective mitigation. The Conservancy released a 2018 Work Plan which outlines the Habitat Conservancy's proposed activities for 2018 (East Contra Costa County Habitat Conservancy 2018).
Contra Costa Canal Fish Screen Project	CCWD	CCWD diversion of water from the Delta at Rock Slough serves as a major component of its water supply. Between 120,000 and 130,000 acre-feet of water per year is diverted by the canal for irrigation and municipal and industrial uses. The diversion at Rock Slough is one of the largest unscreened Delta sites. Project construction was completed in 2012 and installed fish screens at the Rock Slough diversion to minimize the entrainment losses of sensitive fish species (Reclamation 2012). It includes flow control and transition structures necessary to reduce tidal influences and maintain flow rates. This helps the screen perform properly and allow fish to pass by it easily. Improvements at the diversion site also reduces potential predation on target species, fulfills legal requirements of USFWS's 2008 Biological Opinion for the threatened Delta smelt, completes the mitigation for the Los Vaqueros Biological Opinion, and completes CVPIA requirements in Section 3406(b)(5) (Reclamation N.d).
Delta Protection Commission Land Use and Resource Management Plan Update	Delta Protection Commission	The Delta Protection Commission (Commission), created with passage of the Delta Protection Act, was formed to adaptively protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment consistent with the Delta Protection Act and the Land Use and Resource Management Plan for the Primary Zone. The Commission updated its Land Use and Resource Management Plan (Management Plan) in 2010, which was originally adopted in 1995. The Management Plan outlines the long-term land use requirements for the Sacramento-San Joaquin Delta and sets out findings, policies, and recommendations in the areas of environment, utilities and infrastructure, land use, agriculture, water, recreation and access, levees, and marine patrol/boater education/safety programs. The updated Management Plan placed increased emphasis on the requirement for local government general plans to provide for consistency with the provisions of the Management Plan. The Commission develops priorities and timelines for tasks to be implemented each year and provides annual progress reports to the Legislature. One of the tasks identified by the Commission is to monitor the Delta Vision, Bay Delta Conservation Plan, and Delta Risk Management Strategy processes and provide input as deemed appropriate. The Commission has initiated an update of the Management Plan and a draft was released February 2019 (Delta Protection Commission 2019).
Delta Plan	Delta Stewardship Council	In November 2009, the California Legislature enacted SBX7 1, which took effect on February 3, 2010. One portion of this legislation is known as the Sacramento–San Joaquin Delta Reform Act of 2009 (the Delta Reform Act). The Delta Reform Act requires the development of a legally enforceable, comprehensive, long-term management plan for the Delta, which is referred to as the Delta Plan. The Delta Reform Act also created the Delta Stewardship Council (Council), which is an independent State agency. One of the Council's primary responsibilities is to adopt the Delta Plan. The Delta Reform Act requires the Council to adopt a Delta Plan that achieves the State's coequal goals. The Delta Reform Act also specifies the following: (i) eight objectives that are "inherent" in the coequal goals (see Water Code section 85020), (ii) a related statewide policy to reduce reliance on the Delta in meeting the State's future water supply needs through improved regional water self-reliance (Water Code section 85021); and (iii) certain specific subjects and strategies that must be included in the Delta Plan (see generally Water Code sections 85301–85309). The Delta Plan must include BDCP if the BDCP is completed and approved by DFW as a Natural Communities Conservation Plan and by federal agencies as a Habitat Conservation Plan. In September 2013, the Delta Plan was adopted by the Council and subsequently amended in 2016 and 2018 (Delta Stewardship Council 2018).
Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh	CDPR	In 2011, California State Parks developed a Recreation Proposal for the Delta and Suisun Marsh in response to the requirements in SBX7 1. The proposal recommends that communities on the edge of the Delta or Suisun Marsh with access to major transportation routes be developed as "gateways" to provide supplies and information to visitors about recreation opportunities available in an area. Recommendations also include collaboration with other agencies and other partners to expand wildlife viewing, angling, and hunting opportunities; and expansion of the State Park system in the Delta. The Proposal was considered during the preparation of the Delta Plan.

Project	Primary Agencies	Description
Lower Mokelumne River Spawning Habitat Improvement Project	EBMUD	The Mokelumne River is tributary to the Delta and supports five species of anadromous fish. The proposed project would initially place 4,000 to 5,000 cubic yards of suitably sized salmonid spawning gravel annually for a 3-year period at two specific sites, and then provide annual supplementation of 600 to 1,000 cubic yards thereafter. Work will be conducted each year over one week within the months of August and September. Fall-run Chinook salmon and Steelhead are the primary management focus in the river. Availability of spawning gravel in this section of the Mokelumne River has been determined to be deficient because historic gold and aggregate mining operations removed gravel annually and upstream dams have reduced gravel transport to the area. This area was chosen because it is known to have supported fall-run Chinook salmon and Steelhead spawning in the past and because the substrate is suitable for habitat improvement. A final IS/MND was released in August 2014 (EBMUD 2014c).
Folsom Lake Temperature Control Device	El Dorado Irrigation District (EID) and Reclamation	El Dorado Irrigation District, in collaboration with Reclamation, constructed facilities on the bank of Folsom Lake to withdraw water from the warm upper reaches of the lake while preserving the cold water pool at the bottom of the lake to protect downstream aquatic species. The facilities include a large diameter concrete lined vertical shaft and five lined horizontal adits extending from the shaft. This structure, known as a Temperature Control Device (TCD) replaces the District's five existing raw pump casings that extracted water from Folsom Lake at a rate of 19.5 mgd. The new facility is sized to accommodate a maximum extraction rate of 74 mgd over an 18-hr period, which is equivalent to 52 mgd. The temperature control device began operation in spring 2003 (Reclamation, USFWS, and Water Forum 2007).
Public Draft Recovery Plan for Sacramento River Winter-run Chinook Salmon, Central Valley Spring-run Chinook Salmon and Central Valley Steelhead	NMFS	The Draft Recovery Plan provides a roadmap that describes the steps, strategy, and actions that should be taken to return winter-run Chinook salmon, spring-run Chinook salmon, and Steelhead to viable status in the Central Valley, California thereby ensuring their long-term persistence and evolutionary potential. The general near-term strategic approach to recovery includes methods to: secure all extant populations, monitor for O. mykiss in habitats accessible to anadromous fish, and minimize straying from hatcheries to natural spawning areas. Conduct critical research on fish passage and reintroductions with climate change and develop recovery plan for sustainable populations that have minimal susceptibility to catastrophic events. Recovery plan for Sacramento River Winter-Run Chinook salmon, Central Valley Spring-Run Chinook salmon, and Central Valley Steelhead was released in July 2014.
American River Pump Station and Restoration Project	PCWA and Reclamation	The American River Pump Station and Restoration Project, completed in 2008, included a permanent pump station to replace a temporary pumping facility on the American River that was installed in anticipation of construction of Auburn Dam. The project also returned the river to its natural channel. The constructed project includes several features associated with rewarding the project site, constructing the new pump station and screened intake, and creating public access to the reopened river. These features were constructed in two phases, and included the following: • Closure of the half-mile-long diversion tunnel • Removal of over 1 million yards of sediment left from Auburn Dam construction • Installation of over 60,000 yards of rocks and boulders • Construction of a whitewater course of chutes and pools alongside a portage path • Installation of a screened intake on a river chute that is safely passable by boat • Installation of a dividing ridge between the whitewater channel and the intake channel • Construction of a pumping well in the canyon wall beneath the pump station • Construction of the pump station and pipelines Addition of a State Parks entrance facility, parking lots, 2 miles of access roads, and 4,000 feet of hiking trails
Liberty Island Conservation Bank	Reclamation District 2093	This project received permits and approvals in 2009 to create a conservation bank on the northern tip of Liberty Island that would preserve, create, restore, and enhance habitat for native Delta fish species, including Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, California Central Valley Steelhead, delta smelt, and Central Valley fall- and late fall-run Chinook salmon. The project consists of creating tidal channels, perennial marsh, riparian habitat, and occasionally flooded uplands on the site. The project also includes the breaching of the northernmost east- west levee, and preservation and restoration of shaded riverine aquatic habitat along the levee shorelines of the tidal sloughs. The island's private levees failed in the 1997 flood and were not recovered, leaving all but the upper 1,000 acres and the adjacent levees permanently flooded. These upper acres encompass the proposed bank. The lower nearly 4,000 acres will remain, at least for the near future, predominantly open water and subtidal because tidal elevations are too great for marsh or riparian habitat.
Flood Management Program	Sacramento Area Flood Control Agency, Central Valley Flood Protection Board, and USACE	The Sacramento Area Flood Control Agency (SAFCA) Flood Management Program includes studies, designs, and construction of flood control improvements. In the South Sacramento area, SAFCA projects include the South Sacramento Streams Project and the Sacramento River Bank Protection Project. The South Sacramento Streams Project consists of levee, floodwall, and channel improvements starting south of the town of Freeport along the Sacramento River to protect the City of Sacramento from flooding associated with Morrison, Florin, Elder, and Union house creeks. The Sacramento River Bank Protection Project, which is implemented and funded primarily through USACE, addresses long-term erosion protection along the Sacramento River and its tributaries. Bank protection measures typically consist of large angular rock placed to protect the bank, with a layer of soil/rock material to allow bank re-vegetation. SAFCA contributes to funding the local share for bank protection activities within its jurisdiction.

Project	Primary Agencies	Description
South Sacramento Habitat Conservation Plan	Sacramento County and USFWS	The final South Sacramento HCP was released in February 2018 and is a regional plan to address issues related to species conservation, agricultural protection, and urban development in south Sacramento County. The HCP covers 40 different species of plants and wildlife including 10 that are state or federally listed as threatened or endangered, and allow land owners to engage in the "incidental take" of listed species (i.e., to destroy or degrade habitat) in return for conservation commitments from local jurisdictions. The conservation measures outlined in the HCP minimize and mitigate the impact of incidental take and provide for the conservation of covered species that may occur in the plan area. The geographic location of the HCP includes a combined 341,000 acres within south Sacramento County (unincorporated area) and the cities of Rancho Cordova, Elk Grove, and Galt (South Sacramento Habitat Conservation Plan [SSHCP] 2018).
Sacramento Stormwater Quality Partnership	Sacramento County, Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova	The Sacramento Stormwater Quality Partnership (SSQP) is a collaboration of public agencies that protects and improves water quality in local waterways for the benefit of the community and the environment. The partnership's main charge is to oversee compliance with the Sacramento Area- wide Municipal Stormwater Permit, which is designed to comply with state and federal clean water regulations (NPDES Stormwater Permit No. CAS082597). The goals of the partnership are to: educate and inform the public about urban runoff pollution; encourage public participation in community and clean-up events; work with industries and businesses to encourage pollution prevention; require construction activities to reduce erosion and pollution; and require developing projects to include pollution controls that will continue to operate after construction is complete. Program elements include monitoring, target pollutant reduction, special studies (such as evaluating the effectiveness of Best Management Practices [BMPs]), and public outreach (Sacramento Stormwater Quality Partnership 2016).
Sacramento Regional Wastewater Treatment Plant Facility Upgrade Project (EchoWater)	Sacramento Regional County Sanitation District (Regional San)	Regional San is upgrading its existing facilities at the Sacramento Regional Wastewater Plant to meet new NPDES permit requirements. Project implementation would not result in an increase in permitted wastewater treatment capacity; however, would result in improved treated effluent water quality. The project will upgrade existing secondary treatment facilities to advanced unit processes including improved nitrification/denitrification and filtration. The upgrade involves 20 separate construction projects, with construction currently underway through 2023 (Regional San N.d). The completed projects include: • Heavy Equipment Maintenance Building • Bufferlands Building • Fiber Optic Replacement Project • Site Preparation Project • Miscellaneous Site Buildings • Main Electrical Substation Expansion • Disinfection Chemical Storage Project Current Projects include: • Bradshaw Equalization Structure • Channel Aeration Blower • Chemical Handling Decommissioning • Tertiary Treatment Facility • Biological Nutrient Removal Project • Flow Equalization Project • Nitrifying Sidestream Treatment Project • Return Activated Sludge Pumping Plant • Effluent Valve Replacement
San Francisco Bay Plan Amendment and Special Programs	San Francisco Bay Conservation and Development Commission	The San Francisco Bay Conservation and Development Commission (BCDC) is a 27-member commission created by the California Legislature in 1965 dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay's responsible use. The commissioners are appointees from local governments and state/federal agencies. The BCDC has jurisdiction over the open water, marshes and mudflats of greater San Francisco Bay, including Suisun, San Pablo, Honker, Richardson, San Rafael, San Leandro and Grizzly Bays and the Carquinez Strait, and some inland areas. It regulates all filling and dredging in San Francisco Bay (which includes San Pablo and Suisun Bays, sloughs and certain creeks and tributaries that are part of the Bay system, salt ponds and certain other areas that have been diked-off from the Bay), protects Suisun Marsh, regulates new development within the first 100 feet inland from the Bay, pursues an active planning program to study Bay issues, and engages in the region-wide state and federal program to prepare a Long Term Management Strategy for dredging and dredge material disposal in San Francisco Bay. Among its various responsibilities, the BCDC sponsors special programs that address climate change planning; subtidal habitat research, restoration and management; and a long- term management strategy for the placement of dredged material in the San Francisco Bay region.

Project	Primary Agencies	Description
San Francisco Bay Mercury TMDL	San Francisco Bay RWQCB	San Francisco Bay is impaired because mercury contamination is adversely affecting existing beneficial uses, including sport fishing, preservation of rare and endangered species, and wildlife habitat. On February 12, 2008, the U.S. Environmental Protection Agency approved a Basin Plan amendment incorporating a TMDL for mercury in San Francisco Bay and an implementation plan to achieve the TMDL. The amendment was formerly adopted by the San Francisco RWQCB, the SWRCB, and the state Office of Administrative Law. It is now officially incorporated into the WQCP for the San Francisco Bay Basin (Basin Plan). The San Francisco Bay mercury TMDL, which includes the waters of the Delta within the San Francisco Bay region, is intended to: 1) reduce mercury loads to achieve load and wasteload allocations, 2) reduce methylmercury production and consequent risk to humans and wildlife exposed to methylmercury, 3) conduct monitoring and focused studies to track progress and improve the scientific understanding of the system, and 4) encourage actions that address multiple pollutants. The implementation plan establishes requirements for dischargers to reduce or control mercury loads and identifies actions necessary to better understand and control methylmercury production. In addition, it addresses potential mercury sources and describes actions necessary to manage risks to Bay fish consumers. Load reductions are expected via implementation of the Delta Methylmercury TMDL (river source), plus urban runoff management, Guadalupe River mine remediation, municipal and industrial wastewater source controls and pretreatment, and sediment remediation.
Alameda Watershed Habitat Conservation Plan	San Francisco Public Utilities Commission, USFWS, and NMFS.	San Francisco Public Utilities Commission (SFPUC) is in the process of developing a HCP in compliance with the federal Endangered Species Act for the purpose of conserving sensitive species that could be affected by operations and maintenance activities in the Alameda Creek watershed. The HCP proposes coverage for 17 species, including Steelhead and Chinook salmon, over a period 30 years. Activities covered by the HCP include those in the Alameda Watershed Management Plan adopted in 2000 to maintain and improve source water quality and supply while preserving and enhancing the watershed's ecological resources. The SFPUC-owned Alameda Watershed consists of 36,000 acres of rolling grasslands, native woodlands, scrub and freshwater marshes within the Southern Alameda Creek Watershed. The conservation measures are expected to consist of a combination of avoidance and minimization measures, water and land management, river and stream restoration, barrier modification, and threat abatement. SFPUC released all preliminary draft chapters in May 2012 (SFPUC N.d).
San Joaquin County Multi- Species Habitat Conservation and Open Space Plan	San Joaquin Council of Governments	Permitted in 2000, the key purpose of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (Plan) is to provide a strategy for balancing the need to conserve open space and the need to convert open space to non-open space uses. These goals are intended to be met while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the ESA or the California ESA; providing and maintaining multiple-use open spaces that contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to project proponents and society at large. The conservation strategy relies on minimizing, avoiding, and mitigating impacts on the species covered by the Plan. Minimization of impacts on covered species takes a species- based approach emphasizing the implementation of measures to minimize incidental take by averting the actual killing or injury of individual covered species and minimizing impacts to habitat for such species on open space lands converted to non- open space uses. Unavoidable impacts to covered species are addressed through a habitat-based approach that emphasizes compensation for habitat losses through the establishment, enhancement and management-in-perpetuity of preserves composed of a specific vegetation types or association of vegetation types (habitats) upon which discrete groups of covered species rely. The purchase of easements from landowners willing to sell urban development rights is the primary method for acquiring preserves. The Plan identifies zones distinguished by a discrete association of soil types, water regimes (e.g., Delta lands subject to tidal influence, irrigated lands, lands receiving only natural rainfall), elevation, topography and vegetation types. In general, impacts within a particular zone are mitigated within the same zone.
San Joaquin County, Stockton, and Tracy Stormwater Management Programs	San Joaquin County (Department of Public Works), Stockton (Municipal Utilities Department), Tracy (Water Resources Department), and SWRCB	San Joaquin County has developed a Stormwater Management Program committed to protecting local rivers and the Delta by involving and educating residents in stormwater pollution prevention, regulating stormwater runoff from construction sites, investigating non-stormwater discharges, and reducing non-stormwater run-off from municipal operations. Storm drainage is conveyed via County storm drains to the Calaveras, Mokelumne, Old, and San Joaquin Rivers, where it ultimately flows into the Delta. In addition to the County program, several municipalities in San Joaquin County have developed stormwater management programs and obtained NPDES permits from SWRCB. Permits issued for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities are typically issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire. For smaller municipalities, the first 5-year term of the NPDES permits were adopted by the SWRCB in 2003 and expired on May 1, 2008. Under the General Permit, Section H.21, Continuation of Expired Permit, the General Permit continues in force and in effect until a new General Permit is issued or the SWRCB rescinds the General Permit. The goals of the City of Stockton's program are to reduce the degradation of the beneficial uses of the San Joaquin River and tributary streams and the regional groundwater aquifer caused by urban runoff in the metropolitan area of Stockton. The City of Tracy's NPDES permit requires the City to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable.

Project	Primary Agencies	Description
Solano Multispecies Habitat Conservation Plan	Solano County Water Agency	The Solano HCP is intended to support the issuance of an incidental take permit under the federal Endangered Species Act for a period of 30 years. This permit is required by the March 19, 1999 Solano Project Contract Renewal Biological Opinion between USFWS and Reclamation. The scope of the Solano HCP was expanded beyond the requirements of the Biological Opinion to include additional voluntary applicants and additional species for incidental take coverage. Thirty-seven species are proposed to be covered under the Solano HCP. The minimum geographical area to be covered is the Solano County Water Agency's contract service area that is the cities of Fairfield, Vacaville, Vallejo, Suisun City, the Solano Irrigation District and the Maine Prairie Water District. The area covered by the HCP is all of Solano County and a small portion of Yolo County. The Final Administrative Draft was completed in October 2012 (SCWA 2012). The HCP includes a Coastal Marsh Natural Community Conservation Strategy designed to maintain the water and sediment quality standards, hydrology of this natural community; contribute to the restoration of tidally influenced coastal marsh habitat; and promote habitat connectivity. Primary conservation actions include preservation (primarily through avoidance), restoration, invasive species control, and improvement of water quality. The plan area Covers 580,000 acres, which includes 12,000 acres of proposed development and 30,000 acres that will be preserved.
California Water Boards' Strategic Plan Update – 2008-2012	SWRCB	The Strategic Plan Update broadly identifies the SWRCB's vision and direction for the future. It identifies goals intended to achieve that vision, which include: implementing strategies to fully support the beneficial uses for all 2006-listed water bodies; improving and protecting groundwater quality in high- use basins; increasing sustainable local water supplies available for meeting existing and future beneficial uses and ensuring adequate flows for fish and wildlife habitat; comprehensively addressing water quality protection and restoration in consideration of the connections between water quality, water quantity, and climate change, throughout California's water planning processes; improving Water Board transparency and accountability; enhancing consistency across the Water Boards; and ensuring that the Water Boards have access to information and expertise. The plan also identifies environmental priorities that focus on strategies for achieving environmental outcomes associated with protecting the State's surface waters and groundwaters and promoting sustainable water supplies. To better address the implementation of coordinated activities in the Bay-Delta, the SWRCB adopted Resolution 2007-0079 in 2007; similar resolutions were adopted by the San Francisco Bay and Central Valley regional water boards. In those resolutions, the Water Boards committed to ensure the protection of beneficial uses of water, and to the equitable administration of water rights in the Bay-Delta and its tributaries. A strategic work plan, completed in July 2008, describes the actions the Water Boards will undertake to protect beneficial uses of water in the Bay-Delta and the timelines and resource needs for implementing those actions. Workplan activities are divided into the nine broad elements covering a range of actions that: 1) implement the Water Boards' core water quality responsibilities; 2) continue meeting prior Water Board commitments; 3) are responsive to priorities identified by the Governor and the Delta Vision Blue Ribbon Task Force; and 4) build on existing processes, such as the BDCP. The Water Boards do not have the capacity or responsibility to conduct all the planning and implementation activities needed to protect and restore fisheries, aquatic habitats, and other beneficial uses in the Bay-Delta. Accordingly, the work plan identifies activities that will need to be coordinated with other efforts (SWRCB 2019).
Battle Creek Salmon and Steelhead Restoration Project	Reclamation and SWRCB	Construction of the Battle Creek Salmon and Steelhead Restoration Project was initiated in 2009 to reestablish approximately 42 miles of prime salmon and Steelhead habitat on Battle Creek, plus an additional 6 miles on its tributaries. The species benefited by the project include the Central Valley spring-run Chinook salmon (state- and federally listed as threatened), the Sacramento River winter-run Chinook salmon (state- and federally listed as endangered), and the Central Valley Steelhead (federally listed as threatened). Restoration of Battle Creek will be accomplished primarily through the modification of the Battle Creek Hydroelectric Project (FERC Project No. 1121) facilities and operations, including instream flow releases. Facility changes include the removal of five diversion dams and construction of fish ladders and fish screens at three diversion dams. PG&E is the owner and licensee of the Hydroelectric Project. Any changes to the Hydroelectric Project trigger the need for PG&E to seek a license amendment from FERC. The Restoration Project has been developed in collaboration with various resource agencies, including the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the California Department of Fish and Wildlife, and the California Bay Delta Authority, and in conjunction with participation from the public, including the Greater Battle Creek Watershed Working Group and the Battle Creek Watershed Conservancy. The Project is currently being implemented (Reclamation 2018c).
Delta Dredged Sediment Long- Term Management Strategy (LTMS)	USACE	The Delta Dredged Sediment Long-Term Management Strategy is a cooperative planning effort to coordinate, plan, and implement beneficial reuse of sediments in the Delta. Five agencies (USACE, U.S. Environmental Protection Agency, DWR, California Bay Delta Authority, and the Central Valley RWQCB) have begun to examine Delta dredging, reuse, and disposal needs. The strategy development process will examine and coordinate dredging needs and sediment management in the Delta to assist in maintaining and improving channel function (navigation, water conveyance, flood control, and recreation), levee rehabilitation, and ecosystem restoration. Agencies and stakeholders will work cooperatively to develop a sediment management plan that is based on sound science and protective of the ecosystem, water supply, and water quality functions of the Delta. As part of this effort, the sediment management plan will consider regulatory process improvements for dredging and dredged material management so that project evaluation is coordinated, efficient, timely, and protective of Delta resources.
Lower San Joaquin Feasibility Study	USACE	The Lower San Joaquin Feasibility Study was released in January 2018 and was intended to determine if there is a federal interest in providing flood risk management and ecosystem restoration improvements along the Lower (northern) San Joaquin River. The Lower San Joaquin River study area includes the San Joaquin River from the Mariposa Bypass downstream to, and including, the city of Stockton. The study area also includes the channels of the San Joaquin River in the southernmost reaches of the Delta: Paradise Cut and Old River as far north as Tracy Boulevard and Middle River as far north as Victoria Canal. The floodplains of the lower San Joaquin River and its tributaries are also included in the study area (USACE 2018a).

Project	Primary Agencies	Description
Sacramento River Bank Protection Project	USACE	Originally authorized by Section 203 of the Flood Control Act of 1960, the Sacramento River Bank Protection Project is a long-term flood risk management project designed to enhance public safety and help protect property along the Sacramento River and its tributaries. While the original authorization approved the rehabilitation of 430,000 linear feet of levee, the 1974 Water Resources Development Act added 405,000 linear feet to the authorization and a 2007 bill authorized another 80,000 linear feet for a total of 915,000 linear feet of project. The Corps is set to release a Post Authorization Change Report, including an Environmental Impact Statement, to address the effects of the latest authorization. USACE, Sacramento District is responsible for implementation of the project in conjunction with its non-Federal partner, the California Central Valley Flood Protection Board. A Draft Post Authorization Change Report Draft Environmental Impact Statement/Environmental Impact Report was released in December 2014. The Corps released an annual erosion inventory engineering report in July 2015 (USACE N.d.a).
Sacramento River General Reevaluation Report	USACE	The Sacramento River General Reevaluation Report assesses flood risk management capabilities and ecosystem restoration opportunities within the flood conveyance system of the Sacramento Valley and Delta. Public scoping was performed in November 2015.
American River Common Features General Reevaluation Report	USACE	USACE proposed to enhance flood risk management for the city of Sacramento by improving the levees that surround the city. The Final EIS/EIR was released in December 2015.
Suisun Bay Channel Operations and Maintenance	USACE	The project is located 30 miles northeast of San Francisco and is part of the San Francisco Bay to Stockton Ship Channel. The project provides for annual maintenance dredging of the main channel, 300 feet wide and -35 feet deep at Mean Lower Low Water, from the Carquinez Strait at Martinez to Pittsburg (called Suisun Bay Channel), and maintenance dredging of New York Slough Channel farther upstream to Antioch (a distance of 17 miles). The project also provides annual maintenance dredging for a channel 250 feet wide and -20 feet deep south of Seal Islands, from the main channel at Point Edith to the main channel again at Port Chicago at mile (USACE N.d.b).
Suisun Channel (Slough) Operation and Maintenance	USACE	The Suisun Channel connects the City of Suisun near Fairfield, California to Grizzly Bay and thus to Suisun Bay 30 miles northeast of San Francisco. Project operations and maintenance provides for maintenance dredging of an entrance channel in Suisun Bay 200 feet wide and -8 feet deep, and thence a channel 100 to 125 feet wide and -8 feet deep for 13 miles to the head of navigation at City of Suisun, with a turning basin. This shallow draft channel is maintained on an infrequent basis (USACE N.d.b).
Delta Islands and Levees Feasibility Study	USACE and DWR	The final feasibility study and EIS was released in September 2018. This report addressed flood risk management, ecosystem restoration, water quality, water supply, and a variety of other issues. DWR's Delta Risk Management Strategy studies was used to define problems, opportunities, and specific planning objectives. The feasibility study provides the mechanism by which USACE can participate in a cost-shared solution to a variety of water resources needs for which it has authority. USACE and DWR share the cost of the feasibility study equally (USACE 2018b).
Grassland Bypass Project, 2010 - 2019	Reclamation and SLDMWA	The purposes and objectives of the proposed continuation of the Grassland Bypass Project, 2010–2019 are: • To extend the San Luis Drain Use Agreement in order to allow the Grassland Basin Drainers time to acquire funds and develop feasible drain water treatment technology to meet revised Basin Plan objectives (amendment underway) and Waste Discharge Requirements by December 31, 2019; • To continue the separation of unusable agricultural drainage water discharged from the Grassland Drainage Area from wetland water supply conveyance channels for the period 2010–2019; and • To facilitate drainage management that maintains the viability of agriculture in the Project Area and promotes continuous improvement in water quality in the San Joaquin River; The project would continue the present drain water conveyance using the Drain with discharge of a portion of the collected drain water to Mud Slough. New features include negotiation with Reclamation and other stakeholders for a 2010 Use Agreement for the Drain, to include an updated compliance monitoring plan, revised selenium and salinity load limits, an enhanced incentive performance fee system, a new Waste Discharge Requirement from the Regional Board, and mitigation for continued discharge to Mud Slough. In-Valley treatment/drainage reuse at the San Joaquin River Water Quality Improvement Project facility would be expanded to 6,900 acres. The 2019 Grassland Bypass Project Pesticide Monitoring Plan was approved by Central Valley RWQCB in October 2018 (Central Valley RWQCB 2018).
Agricultural Drainage Selenium Management Program Plan	Reclamation and SLDMWA	Impairment of water quality in the San Joaquin River, the Delta, and San Francisco Bay has resulted in the completion of a TMDL for selenium in the lower San Joaquin River, listing of the western Delta as having impaired water quality for selenium, and initiation of a TMDL study for selenium in North San Francisco Bay. The overall goal of the Agricultural Drainage Selenium Management Program is to minimize discharges of selenium in subsurface agricultural drainage from the western San Joaquin Valley to the river and downstream areas. Actions being taken include reduction in the generation of agricultural drainage containing elevated levels of selenium (through land and irrigation management practices) and limiting where and when the drainage water can be discharged.
Red Bluff Diversion Dam Fish Passage Improvement Project	Reclamation and Tehama Colusa Canal Authority	The project modified the Red Bluff Diversion Dam to reduce or minimize impacts on migration of anadromous fish and improve the reliability of agricultural water supply in the Tehama-Colusa and Corning Canal systems. The project included a new pumping plant and fish screen with a pumping capacity of 2,500 cubic feet per second (cfs). The initial installed pumping capacity is 2,000 cfs. There is no increase in water diversions above 2,500 cfs. The original diversion dam is currently in the decommissioning process. Construction commenced in spring 2010 and the facility began full operation in the summer of 2012 (Tehama Colusa Canal Authority [TCCA 2013]).

Project	Primary Agencies	Description
Anadromous Fish Screen Program	Reclamation and USFWS	The primary objective of the Anadromous Fish Screen Program (AFSP) is to protect juvenile Chinook salmon (all runs), Steelhead, green and White Sturgeon, striped bass and American shad from entrainment at priority diversions throughout the Central Valley. Section 3406 (b)(21) of the Central Valley Project Improvement Act (CVPIA) requires the Secretary of the Interior to assist the State of California in developing and implementing measures to avoid losses of juvenile anadromous fish resulting from unscreened or inadequately screened diversions on the Sacramento and San Joaquin rivers, their tributaries, the Delta, and the Suisun Marsh. Additionally, all AFSP projects meet Goal 3 of the CALFED Ecosystem Restoration Program's (ERP) Draft Stage 1 Implementation Plan (USFWS 2015).
American Basin Fish Screen and Habitat Improvement Project	Reclamation, CDFW, and Natomas Central Mutual Water Company	Reclamation and CDFW authorized and provided funds to the Natomas Central Mutual Water Company (Natomas Mutual) to construct and operate the American Basin Fish Screen and Habitat Improvement Project. The purpose of the project is: (1) to avoid or minimize potentially adverse effects to fish, particularly anadromous juvenile fish, due to water diversions from the Sacramento River and Natomas Cross Canal by Natomas Mutual and other small pumps operated by individual landowners for diversion of water into the Natomas Basin; (2) to ensure reliability of Natomas Mutual's water diversion and distribution facilities for beneficial uses of its water supply within its service area; and (3) to maintain important habitat within the Natomas Basin created by the operation of the Natomas Mutual's water distribution facilities. The project would result in modifications of Natomas Mutual's water diversion and distribution system adjacent to the Sacramento River and Natomas Cross Canal in Sacramento and Sutter counties, California. The modifications include the construction and operation of one or two positive-barrier fish screen diversion facilities; decommissioning and removing the Verona Diversion Dam and lift pumps; removing five pumping plants and one small private diversion; and modifying the distribution system. The project is anticipated to be implemented in three phases. A Record of Decision was signed on April 20, 2009 (Reclamation 2009b).
San Joaquin River Restoration Program (SJRRP)	Reclamation, USFWS, NMFS, DWR, and CDFW Wildlife	SJRRP is a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from restoration flows. The restoration program is the product of more than 18 years of litigation, which culminated in a Stipulation of Settlement on the lawsuit known as NRDC, et al., v. Kirk Rodgers, et al. The settling parties reached agreement on the terms and conditions of the settlement, which was subsequently approved by Federal Court on October 23, 2006. The settling parties include the Natural Resources Defense Council, Friant Water Users Authority, and the U.S. Departments of the Interior and Commerce. The settlement's two primary goals are to: • Restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish, and • Reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the settlement. The settlement requires specific releases of water from Friant Dam to the confluence of the Merced River, which are designed primarily to meet the various life stage needs for spring- and fall-run Chinook salmon. The release schedule assumes continuation of the current average Friant Dam release of 116,741 acre-feet, with additional flow requirements depending on the year type. Interim flows began in October 2009, and full restoration flows would begin no later than January 2014. Salmon will be reintroduced in the upper reaches no later than December 31, 2012. There are many physical improvements within and near the San Joaquin River that will be undertaken to fully achieve the river restoration goal. The improvements will occur in two separate phases that will focus on a combination of water releases from Friant Dam, as well as structural and channel improvements. The project was authorized and funded with the passage of San Joaquin River Restoration Settlement Act, part of the Omnibus Public Land Management Act of 2009 (Public Law 111-11) (SJRRP 2019).
Ballast Water Management Program	U.S. Coast Guard	In July 2004, the Coast Guard established a ballast water management program for all vessels equipped with ballast water tanks that enter or operate within U.S. waters. This program requires vessels to maintain a ballast water management plan that is specific for that vessel and allows any master or appropriate official to understand and execute the ballast water management strategy for that vessel. The Coast Guard may impose a civil penalty if ships headed to the U.S. fail to submit a ballast water management reporting form. The National Invasive Species Act (NISA) required the Coast Guard to establish national voluntary ballast water management guidelines. If the guidelines were deemed inadequate, NISA directed the Coast Guard to convert them into a mandatory national program. To comply with NISA, the Coast Guard has established both regulations and guidelines to prevent the introduction of these species because the original voluntary guidelines were deemed inadequate prior to establishing the regulations.
North American Waterfowl Management Plan (NAWMP)	USFWS	The North American Waterfowl Management Plan, a collaboration of Canada, the United States, and Mexico to enhance waterfowl populations, was originally written in 1986 and envisioned as a 15-year effort to achieve landscape conditions that could sustain waterfowl populations. The plan has been modified twice since the 1986 Plan to account for biological, sociological, and economic changes that influence the status of waterfowl and the conduct of cooperative habitat conservation. The 2012 Plan fundamentally re-examined the NAWMP goals and developed renewed goals through extensive consultation with stakeholders. The 2012 Plan established three main goals: 1) Abundant and resilient waterfowl populations to support hunting and other uses without imperiling habitat; 2) wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society; and 3) growing numbers of waterfowl hunters, other conservationists and citizens who enjoy and activity support waterfowl and wetlands conservation (USFWS 2012).

Project	Primary Agencies	Description
Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan	USFWS	U.S. Fish and Wildlife Service published a final Comprehensive Conservation Plan (CCP) for Stone Lakes National Wildlife Refuge in January 2007 to describe the selected alternative for managing Stone Lakes National Wildlife Refuge for the next 15 years. The refuge is located about 10 miles south of Sacramento, straddling I-5 and extending south from Freeport to Lost Slough. Under the plan, the Refuge will continue its focus of providing wintering habitat for migratory birds and management to benefit endangered species. Management programs for migratory birds and other Central Valley wildlife will be expanded and improved and public use opportunities will also be expanded. The number of refuge units open to the public will increase from one to five. In addition, environmental education, interpretation, wildlife observation, wildlife photography, hunting, and fishing programs will be expanded. The plan achieves the refuge's purposes, vision, and goals; contributes to the Refuge System mission; addresses the significant issues and relevant mandates; and is consistent with principles of sound fish and wildlife management.
Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes	USFWS	The recovery plan addresses the recovery needs for eight fish species that occupy the Delta, including delta smelt, Sacramento splittail, longfin smelt, Green Sturgeon, Chinook salmon (spring-run, late fall-run, and San Joaquin fall-run), and Sacramento perch (believed to be extirpated). The objective of the plan is to establish self- sustaining populations of these species that will persist indefinitely. This would be accomplished by managing the estuary to provide better habitat for aquatic life in general and for the fish addressed by the plan. Recovery actions include tasks such as increasing freshwater flows; reducing entrainment losses to water diversions; reducing the effects of dredging, contaminants, and harvest; developing additional shallow-water habitat, riparian vegetation zones, and tidal marsh; reducing effects of toxic substances from urban non- point sources; reducing the effects of introduced species; and conducting research and monitoring.
Lower American River Temperature Reduction Modeling Project (Formerly the Lake Natoma Temperature Curtains Pilot Project)	USFWS, Anadromous Fish Restoration Program; Reclamation; Sacramento Water Forum	The objective of the Lower American River Temperature Reduction Modeling Project is to develop predictive tools that will: 1) Reduce uncertainties in the performance of identified temperature control actions that could be implemented to improve the management of cold water resources in the Folsom/Natoma Reservoir system and the lower American River, and 2) Be available for daily operations, planning, and salmon and Steelhead habitat studies by other project operators and other stakeholders. The project adapted, calibrated, and verified existing thermodynamic and hydrologic mathematical models for application at Folsom Reservoir, Lake Natoma and the lower American River. The models were used to assess the effectiveness of the identified actions individually and in combination in order to support a recommendation as to the development and implementation of one or more actions for the purpose of reducing temperatures in the lower American River. The actions identified to improve transport of cold water through Lake Natoma and reduce the temperature of the lower American River included: a Nimbus Dam curtain, a Lake Natoma plunge zone curtain, Nimbus powerplant debris wall removal, dredging Lake Natoma, and modifying Folsom Powerplant peak loading operation.
Interim Federal Action Plan for the California Bay-Delta	USFWS, Reclamation, DWR, and CDFW	The Interim Federal Action Plan for the California Bay-Delta included an action item for a federal-State and local partnership, led by USFWS to promote the development of a permanent fish restoration facility (the Bay Delta Center for Collaborative Science and Restoration Propagation of Native Imperiled Aquatic Species) to be located at Rio Vista. This facility would be capable of maintaining genetic refugia of delta smelt and other imperiled native aquatic species and producing the numbers of fish necessary for restoration and recovery. Federal agencies expect to partner with the State and local agencies in conducting initial engineering design, site demolition and preparation activities, planning and environmental compliance consultation, and other activities. In addition to the fish restoration facility, the plan calls for developing a backup delta smelt refugium to guard against a catastrophic event and loss of genetic diversity and to provide an interim restoration propagation facility until the Rio Vista facility is operational. Federal agencies will work with the University of California, Davis and the State to upgrade and ensure safety compliance for the existing facility Delta Smelt Research and Culture Facility at Banks Pumping Plant.
San Francisco Bay Delta Action Plan	Environmental Protection Agency	In 2012, Environmental Protection Agency identified seven key activities to advance the protection and restoration of aquatic resources and ensure a reliable water supply in the San Francisco Bay Delta Estuary watershed. EPA's Action Plan included the following actions: (1) Strengthen estuarine habitat protection standards; (2) Advance regional water quality monitoring and assessment; (3) Accelerate water quality restoration through Total Maximum Daily Loads; (4) Strengthen selenium water quality criteria; (5) Prevent pesticide pollution; (6) Restore aquatic habitats while managing methylmercury; and (7) Support the Bay Delta Conservation Plan.
UCD Fish Conservation and Cultural Lab	University of California, Davis, DWR, CDFW, USFWS, and Reclamation	The University of California, Davis (UC Davis) and DWR, working with federal agencies, operates a program to spawn and rear delta smelt for scientific studies, and develops and improves cultural methods for delta and longfin smelt. The facility includes a delta smelt culture laboratory located at DWR's Fish Facility near Byron.
Delta Research Station Project	DWR and USFWS	The planned Delta Research Station is science and research station in the Delta and would consist of two facilities, the Estuarine Research Station and the Fish Technology Center. The Delta Research Station would provide improved and additional facilities and would provide accurate and useful information to support adaptive management of the Delta and conservation of Delta ecosystems. This project would include construction activities In the San Francisco Bay-Delta Region. The schedule for construction is undecided currently.
Lower American River Flow Management Standard Implementation	Water Forum and Reclamation	The Sacramento Water Forum developed a Modified Flow Management Standard (FMS) for the lower American River that was released in October 2015. The Modified FMS will significantly lower water temperatures in the lower American River during the crucial rearing season for juvenile Steelhead; provide better overall habitat conditions; significantly improve water supply reliability in the American River basin by avoiding low reservoir levels; and avoid redirected impacts to Sacramento River fisheries.

Project	Primary Agencies	Description
West Sacramento Levee Improvements Program	West Sacramento Area Flood Control Agency (WSAFCA) and USACE	The West Sacramento Levee Improvements Program (WSLIP) would construct improvements to the levees protecting West Sacramento to meet local and federal flood protection criteria. The program area includes the entire WSAFCA boundaries which encompasses portions of the Sacramento River, the Yolo Bypass, the Sacramento Bypass, and the Sacramento Deep Water Ship Channel. The levee system associated with these waterways includes over 50 miles of levees in Reclamation District (RD) 900, RD 537, RD 811, DWR's Maintenance Area 4, and the Deep Water Ship Channel. These levees completely surround the West Sacramento. For the purposes of this program, the levees have been generally divided into the nine reaches: Sacramento River Levee North, Sacramento River Levee South, Port North Levee, Port South Levee, South Cross Levee, Deep Water Ship Channel Levee East, Deep Water Ship Channel Levee West, Yolo Bypass Levee, and Sacramento Bypass Levee. WSAFCA is preparing to start construction of the Southport Levee Improvement Project, which extends from river mile 57.2 to river mile 51.6 within the Sacramento River South Levee.
Yolo County Stormwater Management Program	Yolo County, Public Works Division	The Yolo County Stormwater Management Program (SWMP) is composed of six elements: Public Education and Outreach, Public Involvement and Participation, Illicit Discharges, Construction Activities, New Development and Redevelopment, and County Operations. The program provides education, opportunities for participation, requires permanent stormwater BMPs for major development, implements improved control measures at county facilities, and delineates responsibilities. The program was adopted by the Yolo County Board of Supervisors in 1994.
San Joaquin River Restoration Program: Salmon Conservation and Research Facility (SCARF) and Related Management Actions Project	CDFW and DWR	CDFW and DWR will lead the state's effort to achieve the goals of restoring flows to the San Joaquin River from Friant Dam to the confluence of the Merced River, and bring back a naturally-reproducing, self-sustaining Chinook salmon fishery while reducing or avoiding adverse water supply impacts. Chinook will be reintroduced pursuant to the San Joaquin River Restoration Program, and CDFW will complete construction of the conservation hatchery and research facility. DWR will perform activities that support the implementation of channel and structural improvements that result in restoring fish and flows. CDFW is currently operating a temporary, small-scale conservation facility (Interim SCARF) and is finalizing construction of the permanent SCARF. The SCARF will be constructed adjacent to the San Joaquin River, just south of the existing San Joaquin (trout) Hatchery in Friant, CA, adjacent to the current Interim SCARF. When complete, the SCARF will consist of a main hatchery building and outdoor broodstock and juvenile rearing tanks with volitional release channels. Once the SCARF is operational, it will be capable of producing up to one million smolts annually for release to the Restoration Area.
Salton Sea Species Conservation Habitat Project	CNRA, Salton Sea Authority, CDFW, DWR	CNRA, in partnership with the Salton Sea Authority, will coordinate state, local and federal restoration efforts and work with local stakeholders to develop a shared vision for the future of the Salton Sea. The Salton Sea is one of the most important migratory bird flyways in North America and is immediately threatened with reduced inflows and increasing salinity. CDFW and DWR will begin immediately to implement the first phase of this effort with the construction of 600 acres of near shore aquatic habitat to provide feeding, nesting and breeding habitat for birds. This project area encompasses approximately 3,770 acres of exposed lake bed. The project is part of the 10-year Plan for implementing projects around the Salton Sea and DWR is currently in the process of selecting a Design-Build Entity to deliver the project (DWR 2019f).
Klamath Basin Restoration	CDFW and CNRA	CDFW and CNRA will continue to work with diverse stakeholders to implement the Klamath Basin restoration and settlement agreements. Those agreements include measures to improve water quality in the Klamath River, restore anadromous fish runs, including Chinook and Coho salmon, and improve water reliability for agricultural and other uses by providing a drought planning mechanism for low water years. The administration will continue to work with tribes, irrigators, ranchers, farmers, the power company, commercial fishing communities, environmental groups, the state of Oregon, and federal agencies to restore the Klamath River, bring water stability to rural communities, resolve long-running disputes, and remove four hydroelectric dams on the Klamath River.
Sustainable Groundwater Management Act	SWRCB, California Department of Toxic Substances Control, DWR	DWR has developed a Strategic Plan for its Sustainable Groundwater Management (SGM) Program. DWR's SGM Program will implement the new and expanded responsibilities identified in the 2014 Sustainable Groundwater Management Act (SGMA). Some of these expanded responsibilities include: (1) developing regulations to revise groundwater basin boundaries; (2) adopting regulations for evaluating and implementing Groundwater Sustainability Plans (GSPs) and coordination agreements; (3) identifying basins subject to critical conditions of overdraft; (4) identifying water available for groundwater replenishment; and (5) publishing best management practices for the sustainable management of groundwater. More than 99 percent of the State's high- and medium-priority basins are now covered by groundwater sustainability agencies that are now tasked with submitting groundwater sustainability plans beginning in 2020 (CNRA 2019).
Delta Science Plan	Delta Stewardship Council, DWR, CDFW, SWRCB, State Agencies, Delta Stewardship Council Implementation Committee, CA State Administration	The problems affecting the Delta need to be addressed on multiple fronts, including habitat loss, export conveyance, water projects operations, pollution control, and flows. The principal state entities charged with addressing these issues are the Delta Stewardship Council, DWR, CDFW, and SWRCB. Several federal agencies exercise regulatory authority related to these issues. There are also multiple water districts, private parties, nongovernmental organizations and tribal communities with a profound stake in these issues. A coordinated approach to managing the Delta is essential to serve the needs of California's residents. State agencies will commit to using collaborative processes to achieve water supply, water quality and ecosystem goals. This approach embraces enhanced sharing of data, consistent use of peer-reviewed science, coordinated review under CEQA, improved integration of related processes, and encouragement of negotiated resolutions. The Delta Science Program is currently updating the Delta Science Plan.
Staten Island Sandhill Crane Habitat Enhancement	CDFW, The Nature Conservancy	In partnership with government and nonprofits, the Nature Conservancy manages thousands of acres of habitat, provides educational opportunities for local schools and is restoring tidal wetlands in the Delta. Investments by the Conservancy have expanded the Cosumnes River Preserve by 3,388 acres since 2002. Diverse crop management is being used to demonstrate the potential for enhanced foraging habitat for cranes and other wildlife, while improving the diversity and viability of the farming operation.

Project	Primary Agencies	Description
Twitchell Island Levee Habitat Restoration Project	CNRA	The Twitchell Island East End Wetland Restoration Project restored approximately 740 acres of palustrine emergent wetlands and approximately 50 acres of upland and riparian forest habitat on Twitchell Island. The project was completed in 2013. An additional 1,250 acres are planned to be restored as part of the Twitchell Island West End Wetland Restoration Project, but the project is conceptual and so timing is uncertain.
Restoration of Eastern Delta Floodplain Habitats on Grizzly Slough in the Cosumnes River Watershed	CNRA	The Grizzly Slough Floodplain Restoration Project is one of two main elements of the North Delta Flood Control and Ecosystem Restoration Project that consists of flood management and habitat improvements where the Mokelumne River, Cosumnes River, Dry Creek and Morrison Creeks converge. Flood flows and high water conditions in this area threaten levees, bridges and roadways. The North Delta project will reduce flooding and provide contiguous aquatic and floodplain habitat along the downstream portion of the Cosumnes Preserve by modifying levees on Grizzly Slough. Benefits to ecosystem processes, fish and wildlife, will be achieved by recreating floodplain seasonal wetlands and riparian habitat on the Grizzly Slough property. Construction is targeted for 2019 or later (CNRA N.d.b).
Lower Putah Creek Realignment	CNRA	This project serves as a fish passage improvement action, as well as a habitat restoration action. In combination with the Upper Reach project, the construction phase will restore approximately 430 acres of floodplain habitat, and 90 acres of tidal freshwater wetlands, create 5 miles of new channel, improve anadromous fish access to 25 miles of stream, and restore instream habitat. Construction is targeted for 2019 or later (CNRA N.d.c).
Prospect Island Tidal Habitat Restoration Project	DWR	The proposed project would restore tidal action to the interior of Prospect Island, partially fulfilling the 8,000-acre tidal habitat restoration obligations contained within the Reasonable and Prudent Alternative (RPA) 4 of the USFWS Delta Smelt Biological Opinion for long-term coordinated operations of the SWP and CVP. Because restoration of tidal habitat would provide access for salmonid rearing at Prospect Island, the project would also be consistent with RPA 1.6.1 of the 2009 NMFS Salmonid Biological Opinion for SWP/CVP. The project would result in a suite of overarching long-term ecosystem benefits, including enhancement of primary productivity and food availability for fisheries in Delta; an increase in the quantity and quality of salmonid rearing habitat and habitat for other listed species; enhancement of water quality, recreation and carbon sequestration in tidal marshes; promotion of habitat resiliency; and promotion of habitat conditions that support native species. Current design of the project includes breaching the external Miner Slough levee and removing a portion of the internal cross levee to open the site to daily tidal inundation. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is targeted for 2019 or later (CNRA N.d.d).
Tule Red Restoration Project	State and Federal Contractors Water Agency	The Tule Red Restoration Project is a joint effort by the State and Federal Contractors Water Agency (SFCWA) and DWR to open more than 400 acres of wetlands to daily tides in the southern Suisun Marsh to benefit native fish species. Located in Solano County's Grizzly Bay region, the site was historically managed as the Tule Red Duck Club. Prior to being diked off to create freshwater habitat favored by game ducks in the early 1900s, this property was estuarine tidal habitat, providing tidal inundation and seasonal freshwater inundation during wet winter periods. This restoration project involves breaching a natural berm to allow for full daily tidal exchange through the interior of the project site and creation of a network of channels to convey water across the marsh plain. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is currently underway (CNRA N.d.e).
Southport Early Implementation Project	West Sacramento Area Flood Control Agency	The Southport Sacramento River Setback Levee is a multi-benefit flood and ecosystem enhancement project that will be constructed as part of the USACE West Sacramento General Reevaluation Report (GRR) process through a partnership to plan and permit by the City of West Sacramento and West Sacramento Area Flood Control Agency (WSAFCA), and DWR Division of Flood Management. The setback area will be a mixed floodplain and riparian habitat to provide floodplain restoration benefits to native fish species. This project would yield up to 152 acres of mixed floodplain and riparian habitat as part of a unique opportunity to set back the levee in this rapidly urbanizing area. Setting back the levee will enhance the ability of the river to meander across the floodplain, distributing soils and nutrients that sustain riparian vegetation and aquatic species. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is currently underway (CNRA N.d.f).
McCormack- Williamson Tract Flood Control and Ecosystem Restoration Project	DWR	The McCormack-Williamson Tract (MWT) island in Sacramento County offers opportunities for restoration of critical tidal freshwater marsh and floodplain habitat. Restoration of MWT is included as part of the DWR North Delta Flood Control and Ecosystem Restoration Project (North Delta FCERP). The North Delta FCERP will implement flood control improvements principally on and around MWT, Dead Horse Island, and Grizzly Slough in a manner that benefits aquatic and terrestrial habitats, species, and ecological processes. Flood flows and high water conditions in the area downstream of the confluence threaten levees, bridges and roadways. The MWT and Grizzly Slough properties are proposed for restoration to reduce flooding and provide aquatic and floodplain habitats along the downstream portion of the Cosumnes Preserve along the Cosumnes and Mokelumne Rivers. The project at MWT is intended to allow the passing of flood flows through the Tract, in a way that minimizes flood impacts to the system because MWT's levees are already lower than surrounding neighbor's levees and flooding has occurred on the island historically. Currently two projects are proposed for MWT: 1) The levee re-sloping and tower levee, known as "Project A," and 2) the levee breach, weir and restoration, known as "Project B." These projects combine flood surge reduction measures with the construction of habitat friendly levees and a breach on MWT to provide benefits to ecosystem processes and species by recreating tidal marsh, subtidal and floodplain/riparian habitats. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is currently underway (CNRA N.d.g).
Hill Slough Restoration Project	CDFW	The Hill Slough Tidal Marsh Restoration Project will restore tidal marsh and enhance upland managed wildlife habitat. The restoration design consists of (1) breaching eight perimeter and two internal levees to open most of the site to tidal action from surrounding sloughs; (2) lowering some segments of existing levees to provide high marsh habitat and improving levees in other areas to provide flood protection for the surrounding area; (3) improving some water control structures; (4) raising the elevation of Grizzly Island Road through the project site to reduce flood risks; (5) adding a loop trail and parking area for improved public access; and (6) upgrading three transmission towers and lines in areas subject to tidal inundation. The project will create approximately 750 acres of restored tidal marsh and upland fish and wildlife habitat, and 200 acres of enhanced wildlife habitat. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is currently underway (CNRA N.d.h)

Project	Primary Agencies	Description
Goat Island at Rush Ranch Tidal Marsh Restoration	Solano Land Trust	This project would restore unrestricted tidal flows to Goat Island Marsh, currently a diked, muted marsh with broken tide gates. Proposed actions include excavating a breach in the levee and constructing a tidal channel, lowering the remainder of the perimeter levee, closing the levee portion of the Marsh Trail, expanding marsh ponds, and revegetating the levee excavation site and marsh-terrestrial ecotone. A boardwalk would be constructed concurrently with the project to provide alternate public access (County of Solano 2015). 80 acres tidal marsh. Adjacent Suisun Hill Restoration and Lower Spring Branch Creek Restoration adds additional land and habitat values. This project has been identified as one of the projects that will be implemented under California EcoRestore. Construction is pending financing for construction.
Other Projects		
ACE*forward*	San Joaquin Regional Rail Commission (SJRRC)	ACE*forward* is a phased improvement plan proposed by the SJRRC to increase service reliability and frequency, enhance passenger facilities, reduce travel times along the existing Altamont Corridor Express (ACE) service corridor from San Jose to Stockton and to extend ACE service to Manteca, Modesto, Ceres, Turlock and Merced. This plan would provide the foundation for SJRRC's near-term and longer-term vision of intercity and commuter passenger rail services. In the near term, ACE*forward* aims to increase service to 6 daily round trips, extend to Modesto and Ceres, implement safety and grade crossings improvements, and add track in key locations. ACE*forward* is also planning longer-term improvements to increase service to at least 10 daily round trips, provide weekend service, and extend to Merced. ACE*forward* is also investigating potential connections to BART in the Tri-Valley and Union City.
California High- Speed Rail System Merced to Fresno Section	California High Speed Rail Authority and Federal Railroad Administration	The Merced to Fresno high-speed train section is 65 miles long. Following release of the Draft Project EIR/EIS for the section in August 2011 and completion of the public review process in October, the Authority Board in December 2011 selected the "Hybrid" route as the preferred alternative out of the three primary alternatives studied during the EIR/EIS process. The Hybrid Alternative alignment generally parallels the Union Pacific Railroad (UPRR) tracks and State Route 99 between Merced and Fresno. To avoid impacts to downtown Madera, the alignment travels east of Madera and generally parallels the existing Burlington Northern Santa Fe railroad corridor. Station locations are proposed in downtown Merced between Martin Luther King Jr. Way and G Street and in downtown Fresno at Mariposa Street (California High-Speed Rail Authority 2012, N.d).
Sacramento County General Plan Update	Sacramento County	The 2030 General Plan was adopted on November 9, 2011. The General Plan is periodically amended to make changes to accommodate public and private projects, to update information and policies, or to comply with State regulations. Multiple sections were amended in September 2017 as part of a Clean-Up Package. The general plan update covers the entire unincorporated portion of Sacramento County, including portions of the Delta within Sacramento County. The update also includes a Delta Protection Element that identifies goals and objectives within the primary zone of the Delta.
Sacramento International Airport Master Plan	Sacramento County	The Master Plan for Sacramento International Airport was completed in 2004 and establishes a program for the improvement of existing facilities and the development of facilities at the Airport over the next 20 years. The plan identifies the type and extent of facilities that are required to meet projections of aviation demand and the airport functions, including the airfield, terminal and related passenger services, cargo, general aviation, airport support, and access. The airport is currently preparing an update to the Master Plan and a draft summary report was released in January 2017 (Leigh Fisher 2017). The summary report identifies a long-term development plan of projects that could be completed over the next 20 years.
San Joaquin County General Plan Update	San Joaquin County	The San Joaquin County General Plan 2035 was released in December 2016. The general plan provides guidance for future growth in a manner that preserves the county's natural and rural assets. Most of the urban growth is directed to existing urban communities. The General Plan contains goals and policies for the Delta as part of the Natural and Cultural Resources Element.
San Francisco Bay to Stockton Deep Water Ship Channel Project	USACE, Port of Stockton, and Contra Costa County Water Agency	The project consists of deep-draft navigation channels that extend from the San Francisco Bay to the Port of Stockton through San Francisco, Marin, Contra Costa, Solano, Sacramento, and San Joaquin Counties. The Corps is assessing the feasibility of deepening the existing 35-foot channel to realize significant transportation cost savings. The channel is currently authorized to 45-feet west of Pittsburgh. Deepening east of Pittsburgh would require new authorization.
Yolo County General Plan Update	Yolo County	The Yolo County 2030 Countywide General Plan was adopted on November 10, 2009 (Yolo County 2009). The general objective of the General Plan is to guide decision-making in the unincorporated areas in the County toward the most desirable future possible. The highest and best use of land within Yolo County is one that combines minimum efficient urbanization with the preservation of productive farm resources and open space amenities.
Franklin Bulk Substation	Sacramento Municipal Utility District (SMUD)	SMUD is proposing the Franklin Electric Transmission Project to construct and operate a new bulk transmission substation (Franklin Bulk substation), construct and operate a new co-located distribution substation (Franklin Distribution substation), modify existing and construct new overhead 69 kilovolt (kV) and 230kV power lines that would link the substations to the electrical grid, and dismantle a nearby distribution substation that will be replaced by the new distribution substation. Project features would include the Franklin Bulk substation, the Franklin Distribution substation, subtransmission lines, transmission lines, and a fiber optic network connection. The proposed Project is located in southwestern Sacramento County, California.

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