Appendix 2
Alternatives Analysis

Contents

Appendix 2A
CALFED Program Inventory of Potential Surface Water Storage Sites

APPENDIX 2A
CALFED Program Inventory of Potential Surface Water Storage Sites

Surface Water Storage Project	Location	Type of Storage	Gross Storage Capacity	Screening Determination
West Side Sacramento Valley				
Colusa Reservoir Complex (Site 9)*	Colusa/Glenn Counties Funks Creek	Off-Stream Storage	3,300 TAF	Retained for further consideration.
Cottonwood Creek Reservoir Complex (Site 11)	Tehama/Shasta Counties Cottonwood Creek	Combined On-stream and Off-Stream Storage	1,600 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate 28 miles of stream and riparian habitat on Cottonwood Creek, which is the most important source of sediments to the Sacramento River and provides spawning habitat for fall-run, late-fall-run, and in some years spring-run Chinook salmon – this would conflict with CALFED ecosystem restoration objectives
Fiddlers Reservoir Site 17)	Tehama/Shasta Counties M.F. Cottonwood Creek	On-Stream Storage	310 to 545 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate a portion of Middle Fork Cottonwood Creek, which is an important source of sediments to the Sacramento River – this would conflict with CALFED ecosystem restoration objectives
Gallatin Reservoir (Site 20)	Tehama County Elder Creek	On-Stream Storage	183 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
Glenn Reservoir (Site 23)	Glenn/Tehama Counties Stony Creek	Off-Stream Storage	8,206 TAF	Eliminated; project would inundate over 50,000 acres, including the town of Elk Creek, the Grindstone Indian Rancheria, critical winter range for the Thomes Creek deer herd, and numerous prehistoric, ethnographic, and significant historic sites, and would block migration routes for salmon and steelhead – project is too large to be considered viable
Hulen Reservoir (Site 24)	Shasta County N.F. Cottonwood Creek	On-Stream Storage	96 to 244 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate a portion of North Fork Cottonwood Creek, which is an important source of sediments to the Sacramento River - this would conflict with CALFED ecosystem restoration objectives
Lake Berryessa Enlargement (Site 4)	Napa County Putah Creek	Off-Stream Storage	Additional 4.4 to 11.7 TAF	Eliminated; enlargement would inundate an additional 15,600 to 43,600 acres of terrestrial wildlife habitat, several miles of warm water stream habitat, and considerable amounts of development around the existing lake, and would require large diversions from the Sacramento River – this would violate CALFED solution principles
Red Bank Project (Dippingvat-Schoenfield) (Site 40)	Tehama County S.F. Cottonwood Creek	Off-Stream Storage – Schoenfield Reservoir; On-Stream Storage - Dippingvat	Dippingvat-104 TAF Schoenfield-250 TAF	Retained for further consideration, but reconfiguration of project diversions recommended to reduce the impacts of Dippingvat, which would be an on-stream reservoir

Surface Water Storage Project	Location	Type of Storage	Gross Storage Capacity	Screening Determination
		Reservoir		
Rosewood Reservoir (Site 42)	Shasta/Tehama Counties Salt Creek and Dry Creek	On-Stream Storage	155 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
Shasta Lake Enlargement (Site 43)	Shasta County Sacramento River	On-Stream Storage	Up to additional 9,750 TAF	Retained for further consideration.
Sites Reservoir (Site 44)	Colusa and Glenn Counties Funks & Stone Corral Cks	Off-Stream Storage	1,200 to 1,900 TAF	Retained for further consideration.
Thomes-Newville Reservoir (Site 48)	Glenn County Thomes & Stoney Creek	Off-Stream Storage	1,840 - 3,080 TAF	Retained for further consideration.
Trinity Lake Enlargement (Site 6)	Trinity County Trinity River	Enlarged Existing On-Stream Storage	Additional 4,800 TAF	Eliminated; increased minimum flow criteria for releases to the Trinity River would minimize the potential increased water supply from this project, and proposed pumping alternatives would make the project unaffordable; project would inundate several existing communities, resort areas, and recreational facilities, as well as numerous historical sites – the scale of the project is so large that it would not be affordable or implementable within a reasonable time period to help meet CALFED objectives
East Side Sacramento Valley				
Allen Camp Reservoir (Site 1)	Allen Camp Reservoir (Site 1)	Allen Camp Reservoir (Site 1)	Allen Camp Reservoir (Site 1)	Allen Camp Reservoir (Site 1)
Auburn Reservoir (Site 2)	Auburn Reservoir (Site 2)	Auburn Reservoir (Site 2)	Auburn Reservoir (Site 2)	Auburn Reservoir (Site 2)
Bella Vista Reservoir (Site 3)	Bella Vista Reservoir (Site 3)	Bella Vista Reservoir (Site 3)	Bella Vista Reservoir (Site 3)	Bella Vista Reservoir (Site 3)
Coloma Reservoir (Site 8)	Coloma Reservoir (Site 8)	Coloma Reservoir (Site 8)	Coloma Reservoir (Site 8)	Coloma Reservoir (Site 8)
Deer Creek Meadows Reservoir (Site 12)	Tehama County Deer Creek	On-Stream Storage	200 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate spring-run Chinook salmon habitat, which would conflict with CALFED ecosystem restoration objectives
Folsom Reservoir Enlargement (Site 18)	El Dorado, Placer, and Sacramento Counties American River	Enlarged Existing On-Stream Storage	Additional 365 TAF	Eliminated; project would inundate stream habitat and recreational use areas on the South and North Fork American River and would have a high cost for a relatively small increase in storage capacity - capacity would likely be reserved for flood control needs, diminishing its ability to meet CALFED objectives
Freemans Crossing Reservoir (Site 19)	Yuba/Nevada Counties Middle Yuba River	On-Stream Storage	300 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and the New Bullards Bar reservoir has reduced the water available for this project since it was first proposed, diminishing its ability to meet CALFED objectives

Surface Water Storage Project	Location	Type of Storage	Gross Storage Capacity	Screening Determination
Garden Bar Reservoir (Site 21)	Sutter County Bear River	On-Stream Storage	245 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate 2,000 acres of riparian, wetland, and deer wintering habitat, and a portion of the Bear River, which supports anadromous fish - this would conflict with CALFED ecosystem restoration objectives
Kosk Reservoir (Site 27)	Shasta County Pit River	On-Stream Storage	800 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate 12 miles of intermittent stream habitat on the Pit River and would likely eliminate the Shasta slender salamander and its habitat – project would also have a low water yield, diminishing its ability to meet CALFED objectives
Marysville Reservoir (Site 31)	Yuba County Yuba River	On-Stream Storage	916 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate 47 miles of stream habitat on the Yuba River, which supports fall-run and spring-run Chinook salmon - this would conflict with CALFED ecosystem restoration objectives
Millville Reservoir (Site 33)	Shasta County South Cow Creek	On-Stream Storage	206 TAF	Eliminated; on-stream design is inconsistent with CALFED policy and would inundate a portion of south Cow Creek - this would conflict with CALFED ecosystem restoration objectives
Squaw Valley Reservoir (Site 46)	Shasta County Squaw Valley Creek	Combined Off-Stream and On-Stream Storage	400 TAF	Eliminated; on-stream portion of design is inconsistent with CALFED policy and would inundate a 7-mile reach of Squaw Valley Creek which receives heavy recreational use; proposed diversion from the Sacramento River would significantly reduce flows in the upper river – CALFED Agencies believe the project is not implementable
Tuscan Buttes Reservoir (Site 49)	Tehama County Paynes & Inks Creeks	Off-Stream Storage	3,675 to 5,500 TAF	Eliminated; reservoir would inundate 19,000 of primarily blue oak woodland and annual grassland, and inundation of Paynes Creek would create fishery impacts to fall-run Chinook salmon and steelhead - this would conflict with CALFED ecosystem restoration objectives
Waldo Reservoir (Site 50)	Yuba County Dry Creek	Off-Stream Storage	60 to 300 TAF	Eliminated; project would inundate 3,600 acres of the Spenceville Wildlife Area, which provides important wildlife habitat and numerous recreational activities, as well as Dry Creek, which supports fall-run Chinook salmon and steelhead - this would conflict with CALFED ecosystem restoration objectives; in addition, the small reservoir is not likely to reduce conflicts in the system or meet CALFED objectives
Wing Reservoir (Site 51)	Shasta County Inks Creek	Off-Stream Storage	244 TAF	Eliminated; major diversion for project would come from Battle Creek, which supports fall- and spring-run Chinook salmon and steelhead and is a priority watershed for early implementation of the Ecosystem Restoration Program – this project would conflict with the CALFED ecosystem restoration objectives
In-Delta				
Chain of Lakes Facility (Site 5)	Sacramento/San Joaquin Delta	Island Storage in Delta	300 to 600 TAF	Eliminated; this facility would convert six major Delta islands to connected reservoirs; the conversion would result in large scale loss of prime agricultural lands and would potentially degrade water quality, which would violate

Surface Water Storage Project	Location	Type of Storage	Gross Storage Capacity	Screening Determination
				several CALFED solution principles
In-Delta Storage (Site 14)	Sacramento/San Joaquin Delta	Island Storage in Central or Southern Delta	230 TAF	Retained for further consideration.
South-of-Delta Aqueduct Storage				
Garzas Reservoir (Site 22)	Stanislaus County Garzas Creek	Off-Stream Storage	139 to 1,754 TAF	Eliminated; project would inundate 15 miles of Garzas Creek and 2,600 acres of wildlife on lands that are protected by a TNC conservation easement and that support the San Joaquin kit fox and the California red-legged frog - project is therefore not implementable
Ingram Canyon (Site 25)	Stanislaus County Ingram Creek	Off-Stream Storage	333 to 1,201 TAF	Retained for further consideration.
Kettleman Plain (Site 26)	Kings County Kettleman Hill	Off-Stream Storage	133 to 283 TAF	Eliminated; relatively small, shallow reservoir that would have high evaporation losses and poorer water quality, diminishing its ability to meet CALFED objectives
Little Salado-Crow Reservoir (Site 28)	Stanislaus County Crow Creek	Off-Stream Storage	132 to 250 TAF	Eliminated; relatively small, shallow reservoir that would be relatively expensive and would have high evaporation losses, diminishing its ability to meet CALFED objectives
Los Banos Grandes (Site 29)	Merced County Los Banos Creek	Off-Stream Storage	275 to 2,030 TAF	Eliminated; the reservoir site contains approximately one-quarter of the Central California Sycamore Alluvial Woodland natural community and would inundate the habitat of six listed species – these impacts would constitute significant redirected impacts
Los Vaqueros Enlargement (Site 30)	Contra Costa County Kellogg Creek	Off-Stream Storage	Additional 965 TAF (100 TAF under const.)	Retained for further consideration.
Orestimba Reservoir (Site 36)	Stanislaus County Orestimba Creek	Off-Stream Storage	380 to 1,140 TAF	Eliminated; project would inundate 33 miles of Orestimba Creek and 2,200 acres of wildlife habitat on lands that are protected by a TNC conservation easement and that supports the San Joaquin kit fox and California red-legged frog and is therefore not implementable
Panoche Reservoir (Site 37)	Fresno County Silver Creek	Off-Stream Storage	160 to 3,100 TAF	Retained for further consideration.
Quinto Creek Reservoir (Site 39)	Merced/Stanislaus County Quinto Creek	Off-Stream Storage	332 to 381 TAF	Retained for further consideration.
Romero Reservoir (Site 41)	Merced County Romero Creek	Off-Stream Storage	184 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
San Luis Reservoir Enlargement (Site 52)	Merced County	Off-Stream Storage	Additional 390 TAF	Eliminated; construction would require that the reservoir be out of service for two years, which would have a significant water supply impacts and would violate several CALFED solution principles
Sunflower Reservoir (Site 47)	Kings/Kern Counties Avenal Creek	Off-Stream Storage	360 to 600 TAF	Eliminated; relatively small, shallow reservoir that would have high evaporation losses and poorer water quality, diminishing its ability to meet CALFED objectives
San Joaquin Valley				

Surface Water Storage Project	Location	Type of Storage	Gross Storage Capacity	Screening Determination
Clay Station (Site 7)	Sacramento County Laguna Creek	Off-Stream Storage	170 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
Cooperstown Reservoir (Site 10)	Stanislaus County	Off-Stream Storage	609 TAF	Eliminated; no environmental analysis has been conducted for this relatively shallow reservoir that would require numerous saddle dams – existing project data comes from a 1949 report – the project is not considered to be implementable due to the uncertainties regarding its viability and the large number of required saddle dams
Deer Creek Reservoir (Site 13)	Sacramento County near Rancho Murietta	Off-Stream Storage	600 TAF	Eliminated; diversions to this reservoir could jeopardize opportunity to provide cold water to the lower American River, which would conflict with CALFED ecosystem restoration objectives
Duck Creek Reservoir (Site 15)	San Joaquin County Calaveras watershed	Off-Stream Storage	100 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
Farmington Reservoir Enlargement (Site 16)	San Joaquin County Littlejohns Creek	Combined On-Stream and Off-Stream Storage	100 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
Millerton Lake Enlargement (Site 32)	Fresno County San Joaquin River	On-Stream Storage	720 TAF	Retained for further consideration.
Montgomery Reservoir (Site 34)	Merced County Dry Creek	Off-Stream Storage	240 TAF	Retained for further consideration.
Nashville Reservoir (Site 35)	El Dorado/Sacramento Counties - Cosumnes River	Combined Off-Stream and On-Stream Storage	1,155 TAF	Eliminated; on-stream portion of design is inconsistent with CALFED policy and would inundate a portion of the Cosumnes River, which has been designated as Essential Fish Habitat - this would conflict with CALFED ecosystem restoration objectives
Pardee Reservoir Enlargement (Site 38)	Calaveras/Amador Counties Mokelumne River	On-Stream Storage	Additional 150 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening
South Gulch Reservoir (Site 45)	San Joaquin County South Gulch tributary to Calaveras River	Off-Stream Storage	180 TAF	Eliminated; does not meet the 200 TAF threshold for initial screening

*Site numbers indicate Project locations on Figure 2A-1.

Note:

TAF = Thousand Acre Feet

Source: CALFED, 1997.

Figure

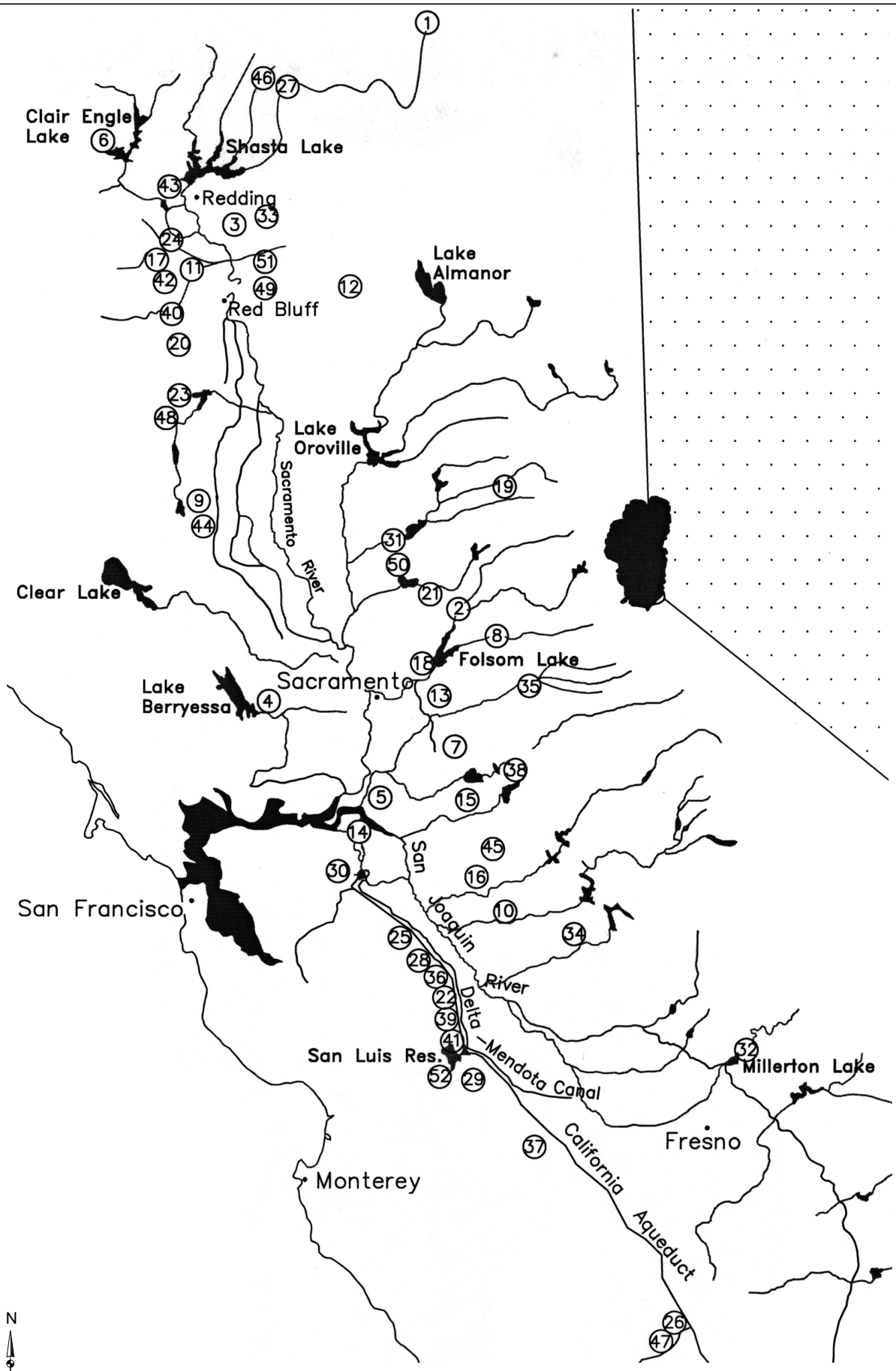

FIGURE 2A-1
Surface Storage Component Map
North-of-the-Delta Offstream Storage Project

Appendix 2B
Projects and Programs Included in the No Project/No Action Alternative

APPENDIX 2B
Projects and Programs Included in the No Project/No Action Alternative

Project	Primary Agencies	Description	References
Mayberry Farms Subsidence Reversal and Carbon Sequestration Project	California Department of Water Resources	The Mayberry Farms Subsidence Reversal and Carbon Sequestration Project will create permanently flooded wetlands on a 308-acre parcel on Sherman Island that is owned by the Department of Water Resources (DWR). The project will restore approximately 192 acres of emergent wetlands and enhance approximately 115 acres of seasonally flooded wetlands. Construction began on June 30, 2010 and ended October 7, 2010.	http://www.water.ca.gov/floodsafe/fessro/environmental/dee/mayberry.cfm
Contra Costa Canal Fish Screen Project	Contra Costa Water District	The Contra Costa Canal (Canal) is part of the Central Valley Project's Delta Division. Water from the Sacramento- San Joaquin Delta is diverted at Rock Slough at the beginning of the Canal, the major water supply and delivery system for the Contra Costa Water District. 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 Canal diversion at Rock Slough is one of the largest unscreened Delta sites. A number of resident and migratory fish species, including the threatened Delta smelt and the endangered winter-run Chinook salmon, can be drawn into the Canal. For this project, a fish screen will be constructed to keep fish from entering the Canal intake.	http://recovery.doi.gov/docs/bor/factsheets/contra_costa.pdf
Middle River Intake and Pump Station (previously known as the Alternative Intake Project	Contra Costa Water District, Bureau of Reclamation, and California Department of Water Resources	The main features include a new 250 cubic foot per second (cfs) pump station, a concrete intake structure with a fish screen similar to Old River Pump Station, a building to house electrical and control equipment, electrical substation, surge control tanks, and approximately 12,000 feet of 72-inch pipe across Victoria Island with tunneling beneath Old River to the District's Old River Pump Station where it will be connected to existing conveyance facilities.	http://www.ccwater.com/aip.asp
Federal Energy Regulatory Commission License Renewal for Oroville Project	California Department of Water Resources	DWR is seeking a new federal license from FERC to continue generating hydroelectric power while continuing to meet existing commitments and comply with laws and regulations pertaining to water supply, flood control, the environment, and recreational opportunities at Lake Oroville.	http://www.water.ca.gov/orovillerelicensing/DEIR_070521.cfm

Project	Primary Agencies	Description	References
Freeport Regional Water Project	Freeport Regional Water Authority and Bureau of Reclamation	The Freeport Regional Water Authority (FRWP) is a cooperative effort of the Sacramento County Water Agency (SCWA) and the East Bay Municipal Utility District (EBMUD) of Oakland to supply surface water from the Sacramento River to customers in central Sacramento County and the East Bay area of California. The FRWP will provide SCWA with up to 85 million gallons of water per day (mgd). SCWA will supply this water to its customers to supplement groundwater use in the central part of the county. EBMUD will use up to 100 mgd of water during dry years only, estimated to be three out of every 10 years, as a supplemental water source to complement existing conservation programs.	http://www.freeportproject.org/nodes/explore/
Liberty Island Conservation Bank	Reclamation District 2093	The purpose of this Conservation Bank Agreement (CBA) is to set forth the agreement of the Parties regarding the establishment, use, operation, and maintenance of the Bank to compensate for unavoidable impacts to, and conserve and protect Covered Species and Covered Habitat. The Bank Sponsor shall preserve, restore, create, and/or enhance and then manage and maintain Covered Species and Covered Habitat in accordance with this CBA, the Development Plan, Interim Management Plan and Long-term Management Plan.	http://www.cvfpb.ca.gov/meetings/2010/062510Item8A_18334_ConservBankAgrmt_AttAthruD.pdf
Delta Water Supply Project - Phase I	City of Stockton	The Delta Water Supply Project provides a new supplemental high quality water supply for the Stockton Metropolitan Area. The finished project replaces declining surface water resources, protects groundwater supplies, and provides for current and future water needs.	http://www.deltawatersupplyproject.com/FAQs.htm
Battle Creek Salmon and Steelhead Restoration Project	Bureau of Reclamation and State Water Resources Control Board	The Battle Creek Salmon and Steelhead Restoration Project (Restoration Project) is being implemented near the town of Manton, California in Shasta and Tehama Counties. Upon its completion, the Restoration Project will reestablish approximately 42 miles of prime salmon and steelhead habitat on Battle Creek, plus an additional 6 miles on its tributaries. The species 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).	http://www.usbr.gov/mp/battlecreek/index.html

Project	Primary Agencies	Description	References
Red Bluff Diversion Dam Fish Passage Improvement Project	Tehama Colusa Canal Authority and Bureau of Reclamation	The Fish Passage Improvement Project was needed as an improvement over the existing Red Bluff Diversion Dam on the Sacramento River, which has gates that, when lowered, form Lake Red Bluff and provide for diversion of irrigation water from the river into the Tehama-Colusa and Corning Canals. But the gate position also created a barrier to migrating fish. Although the dam was initially operated to provide continuous diversion, the gates-in diversion period has been reduced over the years to less than four months in order to improve fish passage of several salmon species and now green sturgeon, recently listed under the Endangered Species Act. The construction of a screened pumping plant will allow the Diversion Dam gates to be permanently placed in the open position for free migration of fish while ensuring continued water deliveries to 150,000 acres of high-value cropland. The new features of the project will include a fish screen, intake channel, and a pumping plant with a capacity of 2,500 cubic feet per second, an access bridge, and a discharge conduit to divert water from the Sacramento River into the Tehama-Colusa and Corning Canals.	http://www.usbr.gov/mp/2010_accomp_rpt/accomp/red_bluff/index.html
American Basin Fish Screen and Habitat Improvement Project	Bureau of Reclamation, California Department of Fish and Game, and Natomas Central Mutual Water Company	The purpose of the American Basin Fish Screen (ABFS) Proposed Action is to improve passage conditions for migratory fish species in segments of the lower Sacramento River and Natomas Cross Canal (NCC) adjacent to the American Basin, to improve aquatic and riparian habitat conditions in the project area, and to prevent entrainment of resident and migratory fish species in unscreened water diversions.	http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=3101

Project	Primary Agencies	Description	References
Delta-Mendota Canal/California Aqueduct Intertie	Bureau of Reclamation	The Intertie has been constructed in an unincorporated area of the San Joaquin Valley in Alameda County, west of the city of Tracy, California. The facility is located in a rural agricultural area owned by federal and state governments. The Intertie, a shared federal-state water system improvement, connects the Delta-Mendota Canal (DMC) (federal facility) and the CA (state facility) via two 108-inch-diameter pipes and pumping capacity of 467 cubic feet per second (900 cfs gravity flow from CA to DMC). The Intertie connection is 500 linear feet. The Intertie addresses DMC conveyance conditions that had restricted use of the C.W. “Bill” Jones Pumping Plant to less than its design capacity, potentially restoring as much as 35,000 acre-feet of average annual deliveries to the Central Valley Project (CVP). Jones Pumping Plant and the DMC are the primary federal water delivery facilities that provide water to CVP contractors south of the Bay-Delta. The Intertie provides redundancy in the water distribution system, allows for maintenance and repair activities that are less disruptive to water deliveries, and provides the flexibility to respond to CVP and State Water Project (SWP) emergencies. The contract was awarded in July 2010 and construction was completed in April 2012.	http://www.usbr.gov/mp/intertie/index.html

Project	Primary Agencies	Description	References
Folsom Dam Safety and Flood Damage Reduction Project (DS/FDR)	Bureau of Reclamation and USACE	The project represents a coordinated effort among the U.S. Bureau of Reclamation and U.S. Army Corps of Engineers 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 (MIAD), static improvements to earthen structures, security upgrades, replacement of the Main Concrete Dam spillway gates, and a 3.5-foot (ft) raise to all Folsom Facility structures. Construction on the auxiliary spillway began in 2008 and is expected to be completed in 2015. The modifications to the dam would allow for the release of water sooner than is now 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 would 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 would be 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. The project area is located in an area designated as non-attainment for ozone and fine particulate matter. Construction-related emissions of nitrogen oxides (NO_x), a precursor for ozone, and particulate matter less than 10 and 2.5 microns in diameter (PM10 and PM2.5) would exceed Federal and/or California air quality standards (pps. 3.3-29 to 3.3-37). Mitigation measures are necessary to reduce these adverse emissions. Even with mitigation, NO_x, PM10 and carbon monoxide (CO) emissions would be greater than the General Conformity de minimis thresholds, triggering the requirement for a full general conformity evaluation for the selected preferred alternative prior to the Record of Decision (ROD) (p. 3.3-37).	http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=1808

Project	Primary Agencies	Description	References
General Plan Update	Yolo County	The Yolo County General Plan was adopted on July 17, 1983, and provides for growth and development in the unincorporated area through 2010. Yolo County occupies 653,549 acres (1,021 square miles) in the California Central Valley along the Sacramento River Delta. In May 2003, Yolo County began a comprehensive update to the county's general plan. In January 2009, the county conducted a series of public workshops to receive comments on the Revised Draft 2030 Countywide General Plan, and the Draft EIR was released in April 2009. According to the Draft EIR, the Draft General Plan would allow for additional growth in the unincorporated area of the County of approximately 30,195 people, up to 10,784 homes, and 19,209 jobs. At build-out of the Draft General Plan, assumed to occur by 2030 for the purposes of the EIR, the unincorporated county could have a population of approximately 64,700 persons, approximately 22,061 residential units, and approximately 53,154 jobs. The County did not meet the June 30, 2008 deadline for State certification of the updated Housing Element. While the County's General Plan (including the current Housing Element) remains legally adequate despite passage of the State deadline, the inability to have a new certified element in place by the State deadline creates potential adverse circumstances for housing grant eligibility.	http://www.yolocounty.org/index.aspx?page=1514
South Bay Aqueduct Improvement and Enlargement Project	California Department of Water Resources	The South Bay Aqueduct Improvement and Enlargement Project will improve and expand the existing South Bay Aqueduct. The project will increase 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 are expected to 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 will supply Zone 7's future Altamont Water Treatment Plant with additional State Water Project water. The enlarged South Bay Aqueduct will be able to carry an additional 130 cfs through Reach 1, and 80 cfs through reaches 2 and 4. Concurrent construction of several infrastructure projects within the SBA project corridor, and capital improvement and development projects within the Livermore Valley could result in cumulative short-term impacts associated with construction activities. These include short-term impacts to water quality, land use, air quality, noise, traffic, hazardous materials, public services and utilities, and visual resources. In some areas, particularly along Dyer Road, these impacts, while individually short term in nature, they would be potentially significant due to their aggregate effect; however, construction-related impacts would not result in long-term alteration of the environment.	http://www.water.ca.gov/engineering/Projects/Current/SBA_Enlargement/

Appendix 2C
Ongoing Programs Included in the No Project/No Action Alternative

APPENDIX 2C
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Project	Agency	Description	References
Egeria Densa Control Programs	California Department of Boating and Waterways	The *Egeria densa* program was authorized by law in 1997. Treatment for *Egeria densa* began in 2001.	http://www.dbw.ca.gov/Environmental/EgeriaDensaGenInfo.aspx
Water Hyacinth Control Programs	California Department of Boating and Waterways	Egeria densa (Brazilian Egeria) is a fast growing submerged aquatic plant that is having a significant impact on shallow-water habitat in the Sacramento/San Joaquin Delta ecosystem. In the 40 years since Egeria densa was introduced into the Delta, it has grown to infest approximately 6500 surface acres or13 percent of the 50,000 surface acres of the Delta. Egeria densa influences the Delta's biological diversity, recreation, and agriculture. It crowds out native plants, slows water flows, entraps sediments, obstructs waterways, impedes anadromous fish migration patterns and clogs water intakes. As a result of these aquatic invasions into the Sacramento-San Joaquin Delta, the California Legislature amended the California Harbors and Navigation Code (1982 for Water Hyacinth and 1997 for Egeria densa) to designate the Department of Boating and Waterways as the lead agency responsible for controlling these aquatic weeds.	http://www.cwss.org/proceedingsfiles/2007/147_2007.pdf

Project	Agency	Description	References
Invasive Species Program	California Department of Fish and Game	The California Marine Invasive Species Program is charged with preventing or minimizing the introduction of non-indigenous species to California Waters from commercial vessels. The program began in 1999 with the passage of California's Ballast Water Management for Control of Non-indigenous 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 non-indigenous 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 non-indigenous 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.	DFG web site. Invasive Species Program. Sites accessed July 24, 2009. Invasive Species Program, homepage: URL = http://www.dfg.ca.gov/invasives/Invasive Species Program, Quagga and Zebra Mussels: URL = http://www.dfg.ca.gov/invasives/quaggamussel/Invasive Species Program, New Zealand Mudsnail: URL = http://www.dfg.ca.gov/invasives/mudsnail/Invasive Species Program, Northern Pike in Lake Davis: URL = http://www.dfg.ca.gov/lakedavis/Invasive Species Program, Dwarf Eelgrass in California: URL = http://www.dfg.ca.gov/invasives/dwarfeelgrass/

Project	Agency	Description	References
California Aquatic Invasive Species Management Plan	California Department of Fish and Game	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. AIS are a threat to economies and ecosystems throughout the United States and other countries. It has been estimated that more than 50,000 nonnative species (including both aquatic and terrestrial species) have been introduced in the United States, and that annual control costs exceed $120 billion.3 Damages include significant economic losses in agriculture, forestry, and other economic segments as well as important adverse environmental impacts. Costs for control of AIS are estimated at more than $9 billion per year. 4Moreover, these figures typically include only damages for which monetary figures can easily be estimated, i.e., for market-based variables such as lost power generation, reduced water flows, and others. Non-market measures are most often discussed only qualitatively and include, e.g., the values of such lost ecosystem services as natural water filtering, and recreational activities.	DFG. California Aquatic Invasive Species Management Plan. January 2008. Site accessed July 2, 2009. URL = http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3868
Zebra Mussel Rapid Watch Program and Response Plan for California	California Department of Fish and Game	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	DFG web site. Quagga and Zebra Mussels. Site accessed July 22, 2009. URL = http://www.dfg.ca.gov/invasives/quaggamussel/.Zebra Mussel Rapid Response Plan for California.

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		information, and infestation site specific information. The draft plan will serve as the template for a statewide plan that staff from the California Department of Water Resources will continue to develop. One study noted a potential impact on cultural resources. The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental impacts of their proposed actions and reasonable alternatives to those actions. Rapid response efforts for aquatic invasive species may require completion of the NEPA process. The process consists of an evaluation of the environmental effects of a federal undertaking including its alternatives. There are three levels of analysis depending on whether or not an undertaking could significantly affect the environment. These three levels include: categorical exclusion determination; preparation of an Environmental Assessment/Finding of No Significant Impact (EA/FONSI); and preparation of an Environmental Impact Statement (EIS) (EPA 2007). F& G Code §§ 2080 – 2089 CDFG regulates the take of species listed under the California Endangered Species Act. In addition to the instructions in the Fish and Game Code, guidelines for this process are located in Title 14, Division 1, Subdivision 3, Chapter 6, Article 1 of the California Code of Regulations. These statutes and regulations should be consulted if AIS control measures have the potential to impact State-listed species. The California Environmental Quality Act (CEQA) requires public disclosure of all significant environmental effects of proposed discretionary projects. If a project would cause significant effects, final documents in the CEQA process show: 1) what mitigation measures will be required to reduce particular effects to a less significant level; and 2) provide justifications for the approval of the project with particular significant effects left unmitigated (i.e. a finding of overriding consideration). CEQA also contains lists of project types exempt from this process. A “significant” impact is a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, [and] fauna…”. The documented adverse impacts associated with invasive species can fit this broad definition.	

Project	Agency	Description	References
Fish Screen Passage Program	California Department of Fish and Game	The California Department of Fish & Game (CDFG) Fish Screen and Fish Passage Program (FSFPP) project was initiated in 1991 as part of the Salmon, Steelhead Trout and Anadromous Fishes Restoration and Enhancement Program. The main goal of the project is to enhance the fishery resources of California, with an emphasis on salmonid populations, by protecting juvenile fishes. This goal is achieved by first identifying all potential barriers to fish passage, then prioritizing them for fish passage improvement work. Impediments to fish passage can include both natural and man-made structures. Installing a fish screen on the intake of a water diversion helps prevent juvenile fishes from being entrained, thereby contributing to higher numbers of adults returning to the rivers in subsequent years. A Geographic Positioning System (GPS) point is collected for each water diversion and potential fish passage barrier. ArcView Geographic Information System (GIS) mapping software and Microsoft Access are used to create and maintain a comprehensive spatial database of data points. Each data point has an associated record of information and photograph. This information is then used to identify and prioritize potential fish passage improvement sites and thus improve fish migrations. To date, the FSFPP has inventoried over 5800 potential barriers (mostly diversions) statewide.	CALFED. 2005. Bulletin 250 Fish Passage Improvement 2005. June.
Delta-Bay Enhanced Enforcement Program	California Department of Fish and Game	The Delta-Bay Enhanced Enforcement was initiated in 1991 through the Four Pumps Agreement between the California Department of Fish and Game and California Department of Water Resources (funded by the State Water Project Contractors). In 1994, the U.S. Bureau of 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. In the Sacramento Basin, the program targets enforcement during the spring-run Chinook salmon migration and summer holding period.	Reclamation. 2008. CVP/SWP operations, criteria and plan (OCAP) Biological Assessment. May.
Ecosystem Restoration Program Conservation Strategy	California Department of Fish and Game	To reduce conflicts between interest groups and move toward the vision for a restored Sacramento-San Joaquin Delta (Delta) ecosystem, the ERP was created in 2000. In a collaborative effort between the California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and National Oceanic	DFG. 2008. Administrative Staff Draft Ecosystem Restoration Program Conservation Strategy for Stage

Project	Agency	Description	References
		and Atmospheric Administration Fisheries Service (NOAA Fisheries Service), collectively referred to as the ERP Implementing Agencies, ERP continues to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. There is concern whether a through-Delta conveyance approach can meet future water quality objectives and not adversely affect the recovery of threatened and endangered fish species. Although some scientific and engineering evidence suggests that a dual-Delta conveyance configuration may improve export water quality and achieve fish recovery more effectively, other evidence indicates that such a conveyance configuration can cause in-Delta water quality problems. In addition, during scoping and public meetings, some stakeholders and agencies voiced concern that moving water around the Delta instead of through it may cause difficulty in ensuring the appropriate operation of such a facility; create impacts from construction; increase the amount of land needed for the facility; and provide an engineered solution when non-structural modifications and reoperation of existing facilities may provide similar benefits. Alternatives with lower costs but higher adverse impacts were eliminated. Potentially Adverse Consequences **Water supply and water management:** temporary local water supply interruptions due to turbidity of water during construction of facilities and habitat restoration activities. **Water quality:** increases in concentrations of bromide, salinity, total dissolved solids, and total organic carbon in the Delta; increased diversions of water from the Delta, reducing outflow to the Bay and changing Bay salinity; releases of inorganic or organic suspended solids, or toxic substances into the water column in the Delta; increased water temperatures and decreased dissolved oxygen concentrations in the Delta; potential decreased in-stream water quality from reduced in-stream flows associated with new storage facilities. Possible increases in salinity (expressed as EC) in localized areas in the central Delta. Without operation of a diversion facility on the Sacramento River, increases in salinity would be more widespread in the central Delta.	2 Implementation: Sacramento-San Joaquin Delta and Suisun Marsh and Bay Planning Area. August 18, 2008. Department of Fish and Game. Stage 2 Conservation Strategy Memo. August 19, 2008. Site accessed July 27, 2009. URL = http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=6502 Department of Fish and Game. CALFED Ecosystem Restoration Program website. Site accessed July 27, 2009. URL = http://www.delta.dfg.ca.gov/erp/

Project	Agency	Description	References
		Groundwater: Increased groundwater extractions in the Sacramento Valley and, to a lesser extent, in the San Joaquin Valley, resulting in land subsidence, lower groundwater levels, and higher pumping costs; degradation of groundwater quality; or losses of existing wells. In areas where groundwater basins are recharged mainly from percolation of applied water, agricultural and landscape water use efficiency could reduce recharge and result in declines of shallow water tables. **Fisheries and Aquatic Ecosystems:** Increased non-native species abundance and distribution; blocked access to habitat and potentially alter water quality and flow conditions from placement of barriers in the south Delta; altered natural ecosystem structure, removal of benthic communities, and creation of conditions that may damage habitat for desired species from dredging activities; short-term disturbance of existing biological communities and species habitat, mobilized sediments, and input contaminants from construction activities; reduced streamflow and Delta outflow, changed seasonal flow, water temperature variability, and changes in salinity potentially resulting in reduced habitat abundance, impaired species movement, and increased loss of Chinook salmon and other species from diversions to new off-stream storage; reduced frequency and magnitude of net natural flow conditions in the south and central Delta from Delta Cross Channel operations and south Delta barriers; with a Sacramento River diversion facility, impacts on individual organisms of special-status species from reduced net flow conditions in the Sacramento River down-stream of the diversion, increased mortality through abrasion, increased predation, and other factors from a new fish screen facility for the through-Delta element on the Sacramento River, and delayed migration and reduced spawning success for adult fish. **Vegetation and Wildlife:** Fragmentation of existing habitat corridors on small or ephemeral tributaries as a result of inundation by storage reservoirs, potentially blocking the movement and interchange of populations of some wildlife species from upper to lower watershed locations; loss of habitat and direct impacts on special-status species; loss of incidental wetlands and riparian habitats that depend on agricultural water use inefficiencies; temporary or permanent loss or disturbance of wetlands of riparian communities, wintering waterfowl habitat,	

Project	Agency	Description	References
		portions of rare natural communities and significant natural areas, and quantity or quality of forage for species of concern. **Agricultural Land and Water Use:** Conversion of prime, state-wide important and unique farmland; conflicts with adjacent land uses; and conflicts with local government plans and policies. **Agricultural Economics:** reduction in agricultural incomes in local areas. **Agricultural Social Issues:** localized social effects related to reduced agricultural incomes. **Urban Land Use:** Displacement of existing urban residences, physical disruption or division of established communities, and potential conflicts with local general plans. **Urban Water Supply Economics:** Additional costs through payment for Program elements. Many economic effects cannot be determined until more specific information is available. **Utilities and Public Service:** Relocation or modification of major infrastructure components; increased risk of gas line rupture during construction. **Recreation Resources:** Temporary or permanent closure of some recreation areas or facilities; reduced access to recreation facilities; decreased recreation opportunities from changes in reservoir levels; loss of terrestrial and on-stream recreation by inundation from reservoirs; temporary changes to motorized boating in the Delta from speed limits, channel closures, and installation of flow and fish control barriers; decreased in flooded lands suitable for wildlife viewing, hunting, and fishing; reduced water-contact recreation quality from releases of reservoir cold water. **Flood Control:** Reduced levee stability and reductions in a channel's flow conveyance from barriers in the channel; increases in seepage, wind fetch, and wave erosion on landside levee slopes; level of flooding downstream of diversions after removal of Sacramento River tributary diversion structures and other flow obstructions; flood stages along streams; localized subsidence, resulting in levee slumping or cracking near levees; and adverse effects on water quality from use of dredged materials. **Power Production and Energy:** Decrease in amount of energy available for non-project uses; possible air quality and land use	

Project	Agency	Description	References
		impacts from new power plants to replace lost power. **Regional Economics:** Adverse effects to agricultural sector in the Delta. Amount and allocation of costs are currently uncertain.	
Lower Sherman Island Wildlife Area Land Management Plan	California Department of Fish and Game	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 Sacramento–San Joaquin River Delta (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 the California Department of Fish and Game (DFG) 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 land management plan (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 the DFG'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.	DFG. 2007. Lower Sherman Island Wildlife Area Land Management Plan. California Department of Fish and Game, Rancho Cordova.

Project	Agency	Description	References
Yolo Bypass Wildlife Area Land Management Plan	California Department of Fish and Game	The Yolo Bypass Wildlife Area (Wildlife Area) comprises approximately 16,770 acres of managed wildlife habitat and agricultural land within the Yolo Bypass (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 purpose of the Yolo Bypass Wildlife Area Land Management Plan (LMP) is to: • Guide management of habitats, species, appropriate public uses, and programs to achieve DFG's mission; • Direct an ecosystem approach to managing the Yolo Bypass Wildlife Area in coordination with the objectives of the CALFED Ecosystem Restoration Program (ERP); • Identify and guide appropriate, compatible public-use opportunities within the Yolo Bypass Wildlife Area; • Direct the management of the Yolo Bypass Wildlife Area in a manner that promotes cooperative relationships with adjoining private-property owners; • Establish a descriptive inventory of the sites and the wildlife and plant resources that occur in the Yolo Bypass Wildlife Area; • 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 • 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.	DFG. 2008. Yolo Bypass Wildlife Area Land Management Plan. California Department of Fish and Game, Rancho Cordova.

Project	Agency	Description	References
Hatchery and Stocking Program	California Department of Fish and Game and U.S. Fish and Wildlife Service	The California Department of Fish and Game (DFG) has been rearing and stocking fish in the inland waters of California since the late 1800s. DFG 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 DFG claiming that DFG's fish stocking operation did not comply with the California Environmental Quality Act (CEQA). In July, 2007, DFG was ordered by the Sacramento Superior Court to comply with CEQA regarding its fish stocking operations. DFG completed a Draft Environmental Impact Report (EIR) to comply with the court order. The comment period closed in November 2009. The U.S. Fish and Wildlife Service served as the co-lead for the joint EIR/Environmental Impact Statement (EIS).	DFG web site. Site accessed November 6, 2009. URL = http://www.dfg.ca.gov/news/pubnotice/hatchery/

Project	Agency	Description	References
Watercraft Inspection Programs	California Department of Fish and Game, California Department of Food and Agriculture, and 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 the California Department of Fish and Game (DFG). DFG conducts boat inspection training and activities around the state, and has initiated inspections at several water bodies.	California Department of Food and Agriculture. California Border Protection Stations website. Site accessed July 28, 2009. URL = www.cdfa.ca.gov/phpps/PE/ExteriorExclusion/borders.html California Department of Food and Agriculture. Public Affairs. News Release #08-055. "CDFA Border Protection Stations to Continue Fight Against". August 26, 2008. Site accessed July 28, 2009. URL = http://www.cdfa.ca.gov/egov/Press_Releases/Press_Release.asp?PRnum=08-055 Lake Tahoe Regional Planning Agency. Lake Tahoe Aquatic Invasive Species Information Page. Site accessed July 28, 2009. URL = http://www.protecttahoe.org/ Lake Tahoe Regional Planning Agency. Facts on Tahoe's Boat Inspection Fees. AIS Fact Sheet. Site accessed July 28, 2009. URL = http://www.tahoeais.org/AIS_Inspection_Factsheet_2-side.pdf

Project	Agency	Description	References
Delta Levees Flood Protection Program	California Department of Water Resources	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.	DWR web site. Bay-Delta Levees. Accessed July 28, 2009. URL = http://www.water.ca.gov/floodmgmt/dsmo/bdlb/ DWR web site. Delta Levees Special Flood Control Projects. Accessed November 23, 2009. URL = http://www.water.ca.gov/floodmgmt/dsmo/bdlb/spp/ DWR web site. Delta Levee Maintenance Subventions. Accessed November 23, 2009. URL = http://www.water.ca.gov/floodmgmt/dsmo/bdlb/sp/

Project	Agency	Description	References
Levee Repair-Levee Evaluation Program	California Department of Water Resources	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.	DWR web site. Levee Repair. Site accessed July 24, 2009. URL = http://www.water.ca.gov/levees/ DWR web site. Levee Evaluation Program. Site accessed July 24, 2009. URL = http://www.water.ca.gov/levees/evaluation/ DWR web site. Levee Evaluation Program fact sheet. Site accessed July 24, 2009. URL = http://www.water.ca.gov/levees/evaluation/docs/factsheet-levee-eval-prog.pdf

Project	Agency	Description	References
Interagency Ecological Program	California Department of Water Resources	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 (Department of Water Resources, Department of Fish and Game, and State Water Resources Control Board), six federal (Fish and Wildlife Service, Bureau of Reclamation, Geological Survey, Army Corps of Engineers, National Marine Fisheries Service, 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 State Water Project (SWP) and federal Central Valley Project (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.	DWR web site. Interagency Ecological Program: mission and goals. Site accessed September 4, 2009. URL = http://www.water.ca.gov/iep/about/mission.cfm Department of Water Resources. Interagency Ecological Program members. Site accessed September 4, 2009. URL = http://www.water.ca.gov/iep/about/members.cfm Baxter, R., R. Breuer, L. Brown, M. Chotkowski, F. Feyrer, B. Herbold, P. Hrodey, K. Larsen, A. Mueller-Solger, T. Sommer, and K. Souza. 2009. Addendum to the Interagency Ecological Program's 2008 Work Plan to Evaluate the Decline of Pelagic Species in the Upper San Francisco Estuary. February 24.

Project	Agency	Description	References
South Delta Temporary Barriers Program	California Department of Water Resources	The Temporary Barriers Program (TBP) prepares environmental documents, obtains regulatory permits, and administers the annual construction, operation, and monitoring of the Temporary Barriers. The purpose of the project is: to protect San Joaquin salmon migrating through the Delta and provide an adequate agricultural water supply in terms of quantity, quality, and channel water levels to meet the reasonable and beneficial needs of water users in the south Delta area. The TBP also takes actions to protect agricultural diversions that do not benefit from the operations of the barriers, from the adverse effects of the barriers. Objectives of the program are to: • Increase water levels, circulation patterns, and water quality in the southern Delta area for local agricultural diversions, and • Improve operational flexibility of the State Water Project to help reduce fishery impacts and improve fishery conditions.	

Project	Agency	Description	References
Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project	California Department of Water Resources	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 in the channel 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 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 Water Quality Control Plan (Basin Plan) 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 comprises a full-scale aeration system including two – two hundred 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 ancillary equipment and control systems. The system has been sized to deliver approximately 10,000 pounds of oxygen per day into the DWSC. The aeration system is anticipated to only be operated when DWSC DO levels are below the Basin Plan DO water quality objectives (approximately 100 days per year). The project study includes an on-going assessment of DO levels in the DWSC and vicinity and a study of potential adverse effects of oxygen on salmon.	

Project	Agency	Description	References
Zebra Mussel Watch Program	California Department of Water Resources	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.	http://www.water.ca.gov/environmentalservices/invasive_program_overview.cfm
Delta Fish Agreement (Four Pumps Project)	California Department of Water Resources and California Department of Fish and Game	The 1986 Delta Fish Agreement between the Department of Water Resources and the Department of Fish and Game provides for offsetting adverse fishery impacts caused by the diversion of water at the Harvey O. Banks Delta Pumping Plant, a key 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 DFG 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 DFG 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.	http://www.water.ca.gov/environmentalservices/fourpumps.cfm

Project	Agency	Description	References
Lower Yuba River Accord	California Department of Water Resources 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 lifestage 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 U.S. Bureau of Reclamation and 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 Reclamation and DWR would be available for the CVP and the SWP in drier years. The EWA Program would take delivery of water in every year; the CVP/SWP would receive additional water in the drier years.	http://www.ycwa.com/projects/detail/8

Project	Agency	Description	References
Marine Invasive Species Program	California State Lands Commission	The California Marine Invasive Species Program is charged with preventing or minimizing the introduction of non-indigenous species to California Waters from commercial vessels. The program began in 1999 with the passage of California's Ballast Water Management for Control of Non-indigenous 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 non-indigenous 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 non-indigenous 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.	DFG web site. Invasive Species Program. Sites accessed July 24, 2009. Invasive Species Program, homepage: URL = http://www.dfg.ca.gov/invasives/ Invasive Species Program, Quagga and Zebra Mussels: URL = http://www.dfg.ca.gov/invasives/quaggamussel/ Invasive Species Program, New Zealand Mudsnail: URL = http://www.dfg.ca.gov/invasives/mudsnail/ Invasive Species Program, Northern Pike in Lake Davis: URL = http://www.dfg.ca.gov/lakedavis/ Invasive Species Program, Dwarf Eelgrass in California: URL = http://www.dfg.ca.gov/invasives/dwarfeelgrass/

Project	Agency	Description	References
Cache Creek, Bear Creek, Sulfur Creek, Harley Gulch Mercury TMDL	Central Valley Regional Water Quality Control Board	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 Regional Water Quality Control Board 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.	
Irrigated Lands Regulatory Program	Central Valley Regional Water Quality Control Board	The Irrigated Lands Regulatory Program (ILRP) 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 State and Regional water boards 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. Participation in the waiver program is voluntary; 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.	

Project	Agency	Description	References
Riparian Habitat Joint Venture	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 Game, 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, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, 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: • Identify and develop technical information based on sound science for a strategic approach to conserving and restoring riparian areas in California; • Promote and support riparian conservation on the ground by providing guidance, technical assistance and a forum for collaboration; and • 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.	http://www.rhjv.org/

Project	Agency	Description	References
Central Valley Joint Venture	Central Valley Joint Venture Program	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.	

Project	Agency	Description	References
East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan	Contra Costa County and East Contra Costa County Habitat Conservancy	The Final East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) seeks to avoid conflict created between urban growth and habitat conservation, and provide an opportunity to preserve these diverse ecosystems, unique species, and scenic landscapes while clearing regulatory obstacles to continued economic development and growth. The East Contra Costa County HCP/NCCP proposes to acquire and preserve a mosaic of natural communities in East County, including grassland, oak woodland, chaparral, streams, and wetlands. HCP - A Habitat Conservation Plan is prepared to satisfy the federal Endangered Species Act and to receive a permit from the U.S. Fish and Wildlife Service authorizing impacts on threatened and endangered species. NCCP - A Natural Community Conservation Plan is prepared to satisfy the state Natural Community Conservation Planning Act and to receive a permit from the California Department of Fish and Game authorizing impacts on threatened and endangered species. <u>Goals of the Plan</u> Purchase, restore, and permanently protect large, interconnected and biologically rich blocks of habitat. The HCP/NCCP will pool public and private funding to acquire land and restore natural resources. The plan will also help to ensure that conservation acquisitions are guided by sound science, development avoids the best resources in the area, habitat connectivity and wildlife corridors are maintained, and watershed and ecosystem functions (not just individual wetlands and species) are protected.	

Project	Agency	Description	References
Delta Protection Commission Land Use and Resource Management Plan Update	Delta Protection Commission	The Delta Protection Commission seeks to update its Land Use and Resource Management Plan (Management Plan). The plan, originally adopted on February 23, 1995, outlines the long-term land use requirements for the Sacramento-San Joaquin Delta. Based on a variety of significant events and changing needs, the need for the update is timely and essential. In September of 1992, the California Legislature declared that the Sacramento-San Joaquin Delta, consisting of approximately 738,000 acres, is a natural resource of statewide, national, and international significance, containing irreplaceable resources and that it is the policy of the State to recognize, preserve, and protect those resources for the use and enjoyment of current and future generations. Recognizing the possible threat to Delta resources from urban encroachment having the potential to significantly impact agriculture, wildlife habitat, and recreation uses, former Senator Patrick Johnston sponsored legislation (SB 1866) leading to the adoption of the Delta Protection Act. The Act, which is often referred to as the Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, was signed by the Governor on September 23, 1992, with subsequent amendments in 1996, 1998, 1999, and 2000. It is codified in the State Public Resources Code beginning with Sections 297000. The Act includes mandates for the designation of primary and secondary zones within the legal Delta, creation of a Delta Protection Commission, and completion of a Land Use and Resource Management Plan for the Primary Zone.	http://www.delta.ca.gov/commission.htm

Project	Agency	Description	References
Lower Mokelumne River Spawning Habitat Improvement Project	East Bay Municipal Utility District	The Mokelumne River is tributary to the Sacramento-San Joaquin River 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. 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.	
BO on the Long-Term Operations of the CVP and SWP (Sacramento River Winter-run Chinook Salmon, Central Valley Spring-run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Southern Resident Killer Whales)	National Marine Fisheries Service, Bureau of Reclamation, and California Department of Water Resources	On June 4, 2009, NMFS issued a final biological opinion finding that continued operations of the Central Valley Project/State Water Project would likely jeopardize several listed species, including Sacrament River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, Southern Distinct Population Segment of North American green sturgeon, and Southern Resident killer whales. The biological opinion is effective through December 31, 2030. In its final biological opinion, NMFS identified a Reasonable and Prudent Alternative (RPA) that, if implemented, is believed to avoid the likelihood of jeopardizing the continued existence of these listed species. The following summarizes the actions identified in the RPA that would be undertaken by the U.S. Bureau of Reclamation and/or the California Department of Water Resources: • Manage water temperature and water storage in Shasta Reservoir to benefit winter-run Chinook salmon in the Sacramento River • Provide flows and adequate water temperatures in Clear Creek to benefit spring-run Chinook salmon • Modify gate operation of the Red Bluff Diversion Dam (with the objective of removing the gates by 2012) to improve passage for salmon and green sturgeon	National Marine Fisheries Service. 2009. Biological Opinion and Conference Opinion on the Long Term Operations of the Central Valley Project and State Water Project. June 4. Southwest Region. Long Beach, CA.

Project	Agency	Description	References
		• Improve juvenile salmonids rearing habitat in the lower Sacramento River and northern Delta • Improve survival of migrating juveniles by implementing additional gate closures at the Delta Cross Channel • Limit the strength of reverse flows in Old and New rivers to reduce entrainment of juvenile fish into the state and federal export facilities in the south Delta • Implement facility improvements at the state and federal export facilities to increase fish survival • Implement measures, including a fish study using acoustic tags, to improve the ability to increase survival of juvenile steelhead migrating from the San Joaquin River basin • Implement a flow management standard, temperature management plan, and facility modifications to improve conditions for steelhead in the American River • Implement a new year-round minimum flow regime that improves conditions for steelhead in the Stanislaus River • Develop a Hatchery Genetic Management Plans to increase and stabilize the prey base for Southern Resident killer whales • Provide long-term fish passage at Keswick and Shasta dams on the Sacramento River, Nimbus and Folsom dams on the American River, and New Melones Dam on the Stanislaus River The final biological opinion also identified research, monitoring, and reporting requirements.	
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 Final Environmental Impact Report was completed in 2007. The Terminal Modernization is expected to be completed by 2011.	

Project	Agency	Description	References
Flood Management Program	Sacramento Area Flood Control Agency, Central Valley Flood Protection Board, and U.S. Army Corps of Engineers	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 Unionhouse creeks. The Sacramento River Bank Protection Project, which is implemented and funded primarily through the U.S. Army Corps of Engineers, 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.	
Sacramento Stormwater Quality Partnership	Sacramento County, Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova	The Sacramento Stormwater Quality Partnership (SSQP) is a collaborative 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 BMPs), and public outreach.	

Project	Agency	Description	References
San Francisco Bay Mercury TMDL	San Francisco Bay Regional Water Quality Control Board	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 Bay Water Board, the State Water Resources Control Board, and the state Office of Administrative Law. It is now officially incorporated into the Water Quality Control Plan 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 waste load 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.	

Project	Agency	Description	References
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 federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); 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.	

Project	Agency	Description	References
San Joaquin County, Stockton, and Tracy Stormwater Management Programs	San Joaquin County, Stockton, Tracy, and State Water Resources Control Board	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 National Pollutant Discharge Elimination (NPDES) permits from the State Water Resources Control Board (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	Agency	Description	References
Bay Area Stormwater Management Programs	Bay Area Stormwater Management Association Agencies	BASMAA was started in response to the National Pollutant Discharge Elimination System (NPDES) permitting program for storm water in an effort to promote regional consistency and to facilitate efficient use of public resources to implement stormwater regulations. The seven member programs of BASMAA have all agreed to the terms of a memorandum of understanding. The focus of the association is implementing stormwater regulations in a way that cuts across typical departmental boundaries, programs, and lines of communication. To do so, these programs have used essentially a watershed approach involving as many stakeholders as possible and building consensus. Stormwater management programs within the Bay Area include: • Alameda Countywide Clean Water Program, • Contra Costa Clean Water Program, • Fairfield-Suisun Urban Runoff Management Program, • Marin County Stormwater Pollution Prevention Program, • San Mateo Countywide Water Pollution Prevention Program, • Santa Clara Valley Urban Runoff Pollution Prevention Program, and • Programs implemented by Sonoma County Water Agency and Vallejo Sanitation and Flood Control District.	

Project	Agency	Description	References
Delta Dredged Sediment Long-Term Management Strategy	U.S. Army Corps of Engineers	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 (U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Department of Water Resources, California Bay Delta Authority, and the Central Valley Regional Water Quality Control Board) 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.	
Suisun Bay Channel Operations and Maintenance	U.S. Army Corps of Engineers	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 6.	
Suisun Channel (Slough) Operation and Maintenance	U.S. Army Corps of Engineers	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.	

Project	Agency	Description	References
Water Year 2010 Interim Flows Project (San Joaquin River)	Bureau of Reclamation and California Department of Water Resources	The U.S. Bureau of Reclamation (Reclamation) is temporarily changing Friant Dam operations in Water Year 2010 to release Water Year 2010 Interim Flows from Friant Dam into the San Joaquin River and potentially downstream as far as the Sacramento-San Joaquin River Delta (Delta), as specified in the Stipulation of Settlement (Settlement) in NRDC et al. v. Kirk Rodgers et al., and as part of the San Joaquin River Restoration Project. The Water Year 2010 releases could be recaptured by existing water diversion facilities along the San Joaquin River and/or in the Delta. Interim Flows would be constrained by existing channel capacity, anticipated seepage, future agreements with downstream agencies, entities, and landowners, and the capacity of diversions, as well as water supply demand at the possible diversion locations. The purpose of the Water Year 2010 Interim Flows Project is to implement provisions of the Settlement related to Interim Flows and to collect relevant data to guide future releases of Interim Flows and Restoration Flows under the SJRRP. The full restoration flow schedule will be implemented no later than January 2014.	
Anadromous Fish Screen Program	Bureau of Reclamation and U.S. Fish and Wildlife Service	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.	

Project	Agency	Description	References
San Joaquin River Restoration Program	Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Water Resources, and Department of Fish and Game	The San Joaquin River Restoration Program 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).	http://www.restoresjr.net/

Project	Agency	Description	References
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.	
Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan	U.S. Fish and Wildlife Service	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.	

Project	Agency	Description	References
North American Waterfowl Management Plan	U.S. Fish and Wildlife Service	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 2004 Plan is intended to define the needs, priorities, and strategies for the next 15 years, increase stakeholder confidence in the direction of Plan actions, and guide partners in strengthening the biological foundation of North American waterfowl conservation.	http://www.fws.gov/birdhabitat/NAWMP/index.shtm
BO on the Long-Term Operations of the CVP and SWP (Delta Smelt)	U.S. Fish and Wildlife Service, Bureau of Reclamation, and California Department of Water Resources	On December 15, 2008, the U.S. Fish and Wildlife Service (USFWS) delivered its Biological Opinion (BiOp) to the U.S. Bureau of Reclamation on the effects of the continued operation of the federal Central Valley Project and the California State Water Project on the delta smelt and its designated critical habitat. USFWS determined that the continued operation of these two water projects is likely to jeopardize the continued existence of the delta smelt and adversely modify its critical habitat. USFWS identified a Reasonable and Prudent Alternative (RPA) intended to protect each life-stage and the critical habitat of this federally protected species. The RPA addresses the following objectives: 1) prevent/reduce entrainment of delta smelt at Jones and Banks; 2) provide adequate habitat conditions that will allow the adult delta smelt to successfully migrate and spawn in the Bay-Delta; 3) provide adequate habitat conditions that will allow larvae and juvenile delta smelt to rear; and 4) provide suitable habitat conditions that will allow successful recruitment of juvenile delta smelt to adulthood.	U.S. Fish and Wildlife Service. 2008. Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP). December 15. Region 8. Sacramento, CA.
San Joaquin Basin Action Plan	U.S. Fish and Wildlife Service, Bureau of Reclamation, and California Department of Fish and Game	The San Joaquin Basin Action Plan is a cooperative agreement between the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the California Fish and Game to jointly develop a habitat acquisition and wetland enhancement project on approximately 23,500 acres of lands within the Northern San Joaquin River Basin. The plan was created in 1989 to meet Kesterson Reservoir mitigation needs, Water supply for Level 4 will be acquired under CVPIA Section 3406(d)(5).	

Project	Agency	Description	References
Smelt Hatchery Program	University of California, Davis and California Department of Water Resources	UC Davis' department of Biological and Agricultural Engineering operates the Fish Conservation and Culture Laboratory (FCCL) in Byron, California. This facility was created through a collaboration of UC Davis and the U.S. Fish and Wildlife Service to establish a refugial population of Delta smelt. Hatchery techniques were developed to allow the Delta smelt to complete their life cycle under laboratory conditions. This population of fish will be used to preserve the genetic and phenotypic diversity of wild Delta smelt, in an effort to protect this species from extinction. The FCCL has recently begun similar work with the Longfin smelt, another native species of the Delta.	
Yolo County Stormwater Management Program	Yolo County	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.	

Appendix 2D
Operations of Existing SWP and CVP Facilities and other non-SWP/non-CVP Facilities in the No Project/No Action Alternative

APPENDIX 2D
Operations of Existing SWP and CVP Facilities and other non-SWP/non-CVP Facilities in the No Project/No Action Alternative

2D.1 SWP and CVP Delta Facilities and Operations

Operations of the SWP and CVP by DWR and Reclamation would continue with Existing Conditions and the No Project/No Action Alternative, as described in Reclamation's "Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project" (Reclamation, 2008), as modified by the NMFS Operations BO and USFWS Operations BO. Detailed assumptions for the SWP and CVP operations are represented in hydrological and water quality analytical models, as described in Appendix 6A.

The SWP and CVP South Delta intake and conveyance facilities include the SWP Clifton Court Forebay, John E. Skinner Delta Fish Protective Facility (Skinner Fish Facility), Harvey O. Banks Pumping Plant (Banks Pumping Plant), Tracy Fish Collection Facility (Tracy Fish Facility), Delta Cross Channel, C.W. "Bill" Jones Pumping Plant (Jones Pumping Plant), South Delta Temporary Barriers, Joint Point of Diversion, Barker Slough Pumping Plant and North Bay Aqueduct, Contra Costa Water District (CCWD) Diversion Facilities, and Suisun Marsh Facilities.

2D.1.1 Clifton Court Forebay

Clifton Court Forebay is a 31,000-acre-foot regulatory reservoir for the SWP located approximately 10 miles northwest of the City of Tracy. Clifton Court Forebay facilities are identical for Existing Conditions and the No Project/No Action Alternative.

Water moves into Clifton Court Forebay through radial gates along Grant Line Canal (runs parallel to and operates in coordination with the Fabian and Bell Canal; also referred to as West Canal) near the confluence with Old River. The gates are operated on the tidal cycle to reduce approach velocities, prevent scour in adjacent channels, and minimize water elevation fluctuation in the South Delta. The intake gates enable incoming flow into Clifton Court Forebay to be measured and conveyed to the Banks Pumping Plant. Water can be stored in Clifton Court Forebay to be conveyed at a later time to maximize pumping during off-peak hours. The off-peak hours are typically 10:00 p.m. to 7:00 a.m. Monday through Saturday and all day Sunday, and many holidays. The gates prevent reverse flow back into Old River.

The period within the tidal cycle in which the Clifton Court Forebay intake gates are opened is selected to minimize impacts to South Delta water users. DWR reports that Clifton Court Forebay water level varies throughout the day, typically between elevation -2 feet and elevation +0 to +2 feet, depending on tidal conditions and predetermined Clifton Court Forebay gate opening priority. Typical operation is targeted to restore Clifton Court Forebay water level to elevation -1 foot each day at midnight. This water level creates the required hydraulic head differential between the available water in the Delta and Clifton Court Forebay to allow water to flow from the Delta into Clifton Court Forebay to provide sufficient water for the SWP's Delta Export Allocation for the following day. The Clifton Court Forebay gates are closed once DWR's daily allocation has been achieved. If tidal or other conditions prevent DWR's daily allocation from being achieved, the schedule for the following day's operation is adjusted to minimize impacts on DWR deliveries.

The Clifton Court Forebay maximum design operating storage is 28,653 acre-feet at the water surface elevation of +5 feet. The minimum design operating storage is 13,965 acre-feet at the minimum water surface elevation of -2 feet. DWR has indicated that, for future operations, unless engineering improvements are made to the perimeter embankment around Clifton Court Forebay, the maximum operating water surface elevation should be limited to +4 feet.

2D.1.2 Skinner Fish Facility and Banks Pumping Plant

Water from Clifton Court Forebay is conveyed through Skinner Fish Facility to the California Aqueduct Approach Channel that extends to the Banks Pumping Plant. Large fish and debris are directed away from the Banks Pumping Plant by a 388-foot-long trash boom. Smaller fish are diverted from the intake channel into bypasses by a series of metal louvers into a secondary system of screens and pipes, and then into holding tanks. The salvaged fish are returned to the Delta in oxygenated tank trucks.

The NMFS Operations BO requires DWR to initiate studies to develop predator controls in Clifton Court Forebay to reduce salmonid and Steelhead losses in the forebay to no more than 40 percent by March 31, 2014, and remove predators in the secondary channel at least once per week. The BO also requires modifications to operations of the Skinner Fish Facility by December 31, 2012 to achieve at least 75 percent salvage efficiency for Central Valley salmonids, Steelhead, and Southern Distinct Population Segment of North American Green Sturgeon. At this time, specific implementation plans have not been developed, so it would be speculative to include quantitative information in the No Project/No Action Alternative description. Therefore, Skinner Fish Facility and Banks Pumping Plant facilities are identical in the Existing Conditions and No Project/No Action Alternative descriptions.

Banks Pumping Plant has an installed pumping capacity of 10,670 cubic feet per second (cfs) that discharges into five discharge pipelines that convey water into a canal (approximately one mile). The canal conveys water to Bethany Reservoir that serves as a regulating reservoir for the downstream canals that deliver SWP water.

The maximum daily pumping rate at Banks Pumping Plant is controlled by a combination of the State Water Resources Control Board's (SWRCB) Water Rights Decision 1641 (D-1641), an adaptive management process described in BOs, and permits issued by the U.S. Army Corps of Engineers (USACE) that regulate the rate of diversion of water into Clifton Court Forebay. The diversion rate is normally restricted to 6,680 cfs as a three-day average inflow to Clifton Court Forebay and 6,993 cfs as a one-day average inflow to Clifton Court Forebay. The diversions may be greater than these rates in the winter and spring, depending upon San Joaquin River flows at Vernalis.

The Byron-Bethany Irrigation District also diverts water under a water right from the canal between Skinner Fish Facility and Banks Pumping Plant. This diversion occurs under an agreement related to historical water rights in the waters near Clifton Court Forebay.

2D.1.3 Tracy Fish Facility and Jones Pumping Plant

Tracy Fish Facility, located at the Delta-Mendota Canal Intake, and Jones Pumping Plant operate continuously because the CVP facilities do not include a regulating reservoir similar to Clifton Court Forebay. Water is diverted from Old River, upstream of Grant Line Canal, into the 2.5-mile unlined upper reach of the Delta-Mendota Canal that conveys water to the Tracy Fish Facility. The facility uses louver screens to divert fish into tanker trucks. The salvaged fish are returned to the Sacramento River near Horseshoe Bend and San Joaquin River upstream of the Antioch Bridge.

Water from the Tracy Fish Facility is conveyed to the Jones Pumping Plant. Tracy Fish Facility and Jones Pumping Plant facilities are identical in the Existing Conditions and No Project/No Action Alternative scenarios. However, the operations of these SWP and CVP facilities are different for Existing Conditions and the No Project/No Action Alternative due to the differences in assumptions described in Appendix 6A.

The CVP facilities do not include storage capabilities in the South Delta. Therefore, the facilities usually operate continuously when diversions are allowed. Operations of Jones Pumping Plant are constrained by tidal fluctuations and the capacity of the Delta-Mendota Canal between Jones Pumping Plant and the San Luis Reservoir complex. The Delta-Mendota Canal capacity upstream of the San Luis Reservoir complex, including pumping capacity at O'Neill Pumping Plant, is approximately 4,200 cfs. Therefore, operations of Jones Pumping Plant are limited to 4,200 cfs unless deliveries are required for CVP water service contractors that divert upstream of O'Neill Pumping Plant. In many months, operations criteria limit Jones Pumping Plant to diversions of less than 4,200 cfs; however, in fall and winter months, there are opportunities to divert up to 4,600 cfs.

2D.1.4 Delta-Mendota Canal/California Aqueduct Intertie

The Intertie was designed to include a pipeline between the Delta-Mendota Canal and California Aqueduct, south of the Banks and Jones pumping plants, and a new pumping plant on the Delta-Mendota Canal that would allow up to 467 cfs to be pumped from the Delta-Mendota Canal to the California Aqueduct. Currently, the O'Neill Pumping Plant that is located further south along the Delta-Mendota Canal creates a bottleneck due to a design capacity of 4,200 cfs, causing Jones Pumping Plant to pump below capacity in fall and winter. Diverting an additional 400 cfs to the California Aqueduct would allow the Jones Pumping Plant to pump at a maximum monthly average of approximately 4,600 cfs throughout the year. It is anticipated that this operational method would occur primarily September through March. Conversely, up to 900 cfs could be conveyed from the California Aqueduct to the Delta-Mendota Canal along the same pipeline by gravity, if necessary. Operations of the Intertie would be subject to all applicable export pumping restrictions for water quality and fisheries protection.

2D.1.5 South Delta Temporary Barriers Project

The existing South Delta Temporary Barriers Project consists of annual installation and removal of four temporary rock barriers across South Delta channels to protect San Joaquin River Fall-run Chinook salmon from the South Delta intakes and to benefit southern Delta agricultural diverters by increasing water elevations, improving circulation, and improving water quality. The barriers are installed at the following locations:

- Tidal control facilities with rock barriers and gated culverts to improve water elevations and water quality for agricultural diversions during the growing season are located at:
  - Middle River near Victoria Canal, approximately 0.5 mile south of the confluence of Middle River, Trapper Slough, and North Canal
  - Old River along the Fabian Tract, approximately 0.5 mile east of the Delta-Mendota Canal intake
  - Grant Line Canal approximately 400 feet east of the Tracy Boulevard Bridge

- A rock barrier or non-physical barrier is installed in the fall at the Head of Old River near the confluence with San Joaquin River to improve dissolved oxygen in the San Joaquin River by reducing flows into Old River during salmon migration in the San Joaquin River.
- A rock barrier or non-physical barrier is installed in the spring to reduce downstream migrating salmon exposure to diversions at the South Delta intakes.

The South Delta Temporary Barriers facilities and operations are identical in the Existing Conditions and No Project/No Action Alternative scenarios.

2D.1.6 Joint Point of Diversion

Pursuant to SWRCB D-1641 (December 1999), Reclamation and DWR are authorized to use/exchange diversion capacity between the SWP and CVP to enhance the beneficial uses of both projects. The use of one diversion facility by the other project is referred to as the Joint Points of Diversion (JPOD). In general, JPOD capabilities are used to accomplish the following four objectives:

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

The JPOD operations are identical in the Existing Conditions and No Project/No Action Alternative scenarios.

2D.1.7 Barker Slough Pumping Plant and North Bay Aqueduct

The Barker Slough Pumping Plant diverts water from Barker Slough into the North Bay Aqueduct for delivery in Napa and Solano counties. The North Bay Aqueduct intake is located approximately 10 miles from the mainstem Sacramento River at the end of Barker Slough in the Cache Slough area. The maximum pumping capacity is 175 cfs (pipeline capacity). During the last few years, daily pumping rates have ranged between 0 and 140 cfs.

The Barker Slough Pumping Plant and North Bay Aqueduct facilities and operations are identical in the Existing Conditions and No Project/No Action Alternative scenarios. Currently, DWR and Solano County Water Agency are evaluating an alternative intake for the pumping plant because operations have been limited due to water quality and USFWS and NMFS Operations BOs' provisions.

2D.1.8 Contra Costa Water District Diversion Facilities

CCWD intake facilities divert water for irrigation and municipal and industrial uses pursuant to a CVP contract from the Delta at Rock Slough; pursuant to its own SWRCB permit and license at Mallard Slough; and pursuant to its own Los Vaqueros water right permit at Old River near State Route 4.

Besides these intake facilities, CCWD's system includes the Contra Costa Canal conveyance facility and shortcut pipeline, and conveyance facilities constructed concurrently with the Los Vaqueros Reservoir; and storage facilities at Contra Loma Reservoir and Los Vaqueros Reservoir. The Rock Slough intake facilities, the Contra Costa Canal, and shortcut pipeline are owned by Reclamation, and operated and maintained by CCWD pursuant to a contract with Reclamation. Mallard Slough Intake, Old River Intake, and Los Vaqueros Reservoir are owned and operated by CCWD and covered under separate ESA consultation. CCWD has received take authorization for Los Vaqueros Reservoir operations (including Rock Slough, Mallard Slough, Old River, and the Alternative Intake Project) pursuant to ESA Section 7 BOs issued to Reclamation for that purpose. CCWD operations are also included among Reclamation's operations that are covered in the existing USFWS Operations BO and NMFS Operations BO for overall SWP and CVP operations. CCWD has CESA take authorization for all its operations pursuant to a 208 Permit issued by the CDFG. The Mallard Slough and Old River intakes have fish screens. These facilities are included in the Existing Conditions and No Project/No Action Alternative scenarios.

CCWD has completed construction of the Alternative Intake Project and associated conveyance facility on Victoria Canal, including the installation of intake fish screens. CCWD is currently constructing fish screens for the Rock Slough intake facility. Both of these projects are covered by separate ESA consultations. These facilities are included in the No Project/No Action Alternative, but not in Existing Conditions because they were either under construction or in design when definitions of Existing Conditions and No Project/No Action Alternative were developed.

2D.1.9 Water Transfers

State and federal laws governing water use in California promote the use of water transfers to manage water resources, particularly water shortages, provided that certain conditions of the transfer are met to protect source areas and users. Transfers requiring export from the Delta are conducted at times when pumping and conveyance capacity at the SWP or CVP export facilities are available to move the water. Additionally, operations to accomplish these transfers must be carried out in coordination with SWP and CVP operational guidelines, such that the capabilities of the projects to exercise their own water rights or to meet their legal and regulatory requirements are not diminished or limited in any way.

SWP and CVP contractors have independently acquired water and arranged for its pumping and conveyance through SWP facilities. State Water Code provisions grant other parties access to unused conveyance capacity, although SWP contractors have priority access to capacity not being used by DWR to meet SWP contract amounts.

It is assumed that water transfers would be consistent in Existing Conditions and the No Project/No Action Alternative.

2D.1.10 Suisun Marsh Facilities

The existing Suisun Marsh facilities consist of: Suisun Marsh Salinity Control Gates; Morrow Island Distribution System; Roaring River Distribution System; Goodyear Slough Outfall; and various salinity monitoring and compliance stations throughout the Marsh. Since the early 1970s, the California Legislature, SWRCB, Reclamation, CDFG, Suisun Resource Conservation District (SRCD), DWR, and other agencies have engaged in efforts to preserve beneficial uses of Suisun Marsh to mitigate for potential impacts on salinity regimes associated with reduced freshwater flows to the marsh. Initially, salinity standards for Suisun Marsh were set by SWRCB Decision-1485 to protect alkali bulrush production, a primary waterfowl plant food. Subsequent standards pursuant to SWRCB D-1641 reflect the

intention of the SWRCB to protect multiple beneficial uses. A contractual agreement between DWR, Reclamation, CDFG, and SRCD includes provision for measures to mitigate the effects of SWP and CVP operations and other upstream diversions on Suisun Marsh channel water salinity. The Suisun Marsh Preservation Agreement requires DWR and Reclamation to meet specified salinity standards, sets a timeline for implementing the Plan of Protection, and delineates monitoring and mitigation requirements. Maintenance activities for existing facilities include: levee repairs, vegetation removal, fish screen cleaning and installation of new screens, mechanical repairs, structural repairs, removal or replacement of monitoring and compliance stations (including in-water work), and instrumentation installation on or near existing facilities.

It is assumed that Suisun Marsh Facilities would be similar in the Existing Conditions and No Project/No Action Alternative scenarios.

2D.1.11 Tehama-Colusa Canal

Constructed in 1980 by Reclamation, the Tehama-Colusa (T-C) Canal is a lined canal that is approximately 111 miles long. It extends from the Red Bluff Pumping Plant (RBPP) in Tehama County to south of the community of Dunnigan in Yolo County. It is operated by the Tehama Colusa Canal Authority (TCCA) through a Joint Powers Authority comprised of 17 water districts. The TCCA delivers water to the 17 water districts' irrigation service areas in Tehama, Glenn, Colusa and northern Yolo counties. Since the canal operation began, fall and winter diversions have increased due to increased water demands for rice straw decomposition purposes.

Water from the Sacramento River enters the T C Canal Intake at the RBPP. Canal capacity is 2,530 cfs at the start and 1,700 cfs at the terminus. Canal flows enter Funks Reservoir approximately 66 canal miles downstream from the RBPP. The canal capacity at Funks Reservoir is 2,100 cfs.

2D.1.12 Glenn-Colusa Irrigation District Canal

The Glenn-Colusa Irrigation District (GCID) Canal is owned and operated by the Glenn-Colusa Irrigation District. The GCID's Main Pump Station, located approximately five miles north of Hamilton City, diverts water into the existing GCID Canal for distribution to over 130,000 acres of irrigated lands within the GCID service area. The approximately 65 mile long Canal terminates at the Colusa Basin Drain near the town of Williams, California.

GCID's system has undergone significant infrastructure and operational changes; infrastructure changes have included a major expansion of the GCID Fish Screen (completed in 2001) and several improvements along the Canal to allow year round water delivery operations. Two major operational changes included a shift to year round water delivery to provide water in the fall and winter to the federal Sacramento National Wildlife Refuge complex, as well as to meet increased fall and winter season water demands for rice straw decomposition purposes.

The existing Canal is an unlined earthen channel with capacity varying from 3,000 cfs at the upstream end to 300 cfs at its terminus. The 40 mile section of the Canal has six main reaches. There are 40 major structures within this area, including bridges, siphons, and check structures.

2D.2 References

California State Water Resources Control Board (SWRCB). 1999. Water Right Decision 1641. December.

U.S. Bureau of Reclamation. 2008. Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project. Mid-Pacific Region. Sacramento, CA.