

10.1 CUMULATIVE ENVIRONMENTAL IMPACTS

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10.1.1 INTRODUCTION

As defined in CEQA Guidelines Section 15355, a cumulative impact is an environmental impact that is created as a result of the combination of the project evaluated together with other projects causing related impacts. CEQA requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable (CEQA Guidelines Section 15130(a)). "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines Section 15065(a)(3)). If an incremental effect is not cumulatively considerable, then the lead agency does not need to consider that effect significant and must briefly describe the reason why (CEQA Guidelines Section 15130(a)).

CEQA Section 15130(b) states that the discussion of cumulative impacts need not provide as much detail as the discussion of the effects attributable to the project. The level of detail should be guided by what is practical and reasonable.

The following elements are necessary for an adequate discussion of significant cumulative impacts (CEQA Guidelines Section 15130(b)):

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.
- A defined geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limits identified.
- A summary of expected environmental effects that might be produced by those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

10.1.2 Method of Analysis

The cumulative impact analysis for the Monterey Plus EIR includes past, present and probable future water development projects that impact resources impacted by the proposed project which would occur in the southern San Joaquin Valley (including Kern County and the Kern Fan Element); SWP reservoirs including Castaic Lake, Lake Perris, San Luis Reservoir and Lake Oroville; the Sacramento and Feather rivers, the Sacramento-San Joaquin Delta and Plumas County.

San Joaquin Valley – Projects considered in the cumulative analysis include other groundwater storage projects including the Semitropic Stored Water Recovery Unit.

SWP Reservoirs – There are no projects that would change water levels in Castaic Lake. The Seismic Retrofit project at Lake Perris would reduce water levels over a period of up to 10 years. The San Luis Reservoir Low Point Improvement Project would change water levels in San Luis Reservoir.

Sacramento and Feather Rivers and Sacramento-San Joaquin Delta – Projects considered in the cumulative analysis include those which could affect water flows in the Sacramento and Feather rivers and the Sacramento-San Joaquin Delta.

Plumas County – Projects in Plumas County which could contribute to cumulative impacts include pond and plug projects and stream bank stabilization and channel form projects in the counties watersheds.

The criteria used to identify individual projects for consideration in this cumulative analysis included: (1) whether the project is under active consideration; (2) whether the project would be operational or contemplated within the timeframe of the proposed project; and (3) whether the project in combination with the proposed project would have the potential to affect the same resources. If a project met all of these criteria then it was considered reasonably foreseeable and was selected for inclusion in the cumulative impact analysis. Each of the projects that met the criteria as shown in Table 10.1-1 were then assessed to see if these projects, in combination with the proposed project could contribute to a cumulative impact. An assessment was also made to determine if the cumulative impact analysis would be quantitative or qualitative.

The qualitative analysis considers projects that are in the planning stage and are being discussed by various entities (such as various CALFED actions), projects that are not quantifiable using CALSIM simulations (see Table 5-1) or other modeling or analytical programs, but are projects that could have an effect on the same environmental resources as the proposed project. These cumulative projects are addressed qualitatively in order to disclose information about potential cumulative impacts. For resources including surface water hydrology, water quality, water supply, and fisheries, this qualitative analysis complements the discussion that is based on a quantitative analysis. All other resource topics that are not dependent on hydrology, water level, or water quality or that are not effectively evaluated using hydrologic modeling (visual, agricultural, air quality, geology, land use, hazards, noise, cultural, public services and utilities and transportation) are qualitatively assessed.

The following are summary descriptions of the projects considered in this cumulative analysis. Most of the descriptions are summarized based on descriptions provided in the June 2007 Proposed Lower Yuba River Accord Draft EIR/EIS. Table 5-3 in Chapter 5, Methods identifies which of these projects was included in the CALSIM II modeling assumptions for the proposed project.

Shasta Lake Enlargement Project

The CALFED ROD includes enlargement of Shasta Reservoir as an option to increase storage upstream of the Delta. One alternative to expand Shasta Reservoir is to raise the height of the dam by 6.5 feet, which would enlarge the reservoir by 290 TAF, and would inundate a small

TABLE 10.1-1				
PROJECTS IDENTIFIED FOR CONSIDERATION IN DETERMINING WHETHER THEY MEET CRITERIA FOR BEING REASONABLY FORESEEABLE AND INCLUDED IN THE CUMULATIVE IMPACT ANALYSIS				
Line	Project	Criterion 1: Is the action under active consideration?	Criterion 2: Would the action be completed or operational within the timeframe being considered for the proposed project?	Criterion 3: Does the action, in combination with the proposed project alternatives, have the potential to affect the same resources?
CALFED Storage Program				
1	Shasta Lake Enlargement Project	√	√	√
2	North-of-the-Delta Off Stream Storage (Sites Reservoir)	√	√	√
3	In-Delta Storage Program (Delta Wetlands Project)	√	√	√
4	Los Vaqueros Reservoir Expansion Project	√	√	√
5	Upper San Joaquin River Storage Project	√	√	√
CALFED Conveyance Program				
6	South Delta Improvements Program (SDIP)	√	√	√
7	8,500 cfs at Banks	√	√	√
8	10,300 cfs at Banks Pumping Plant	No	No	No
9	Tracy Fish Test Facility	No	No	No
10	Lower San Joaquin Flood Improvements	No	No	No
11	Old River and Rock Slough Water Quality Improvement Project	√	√	√
12	Delta Cross Channel Re-operation and Through-Delta Facility	√	√	√
13	North Delta Flood Control and Ecosystem Restoration Project	√	√	√
14	Delta-Mendota Canal/California Aqueduct Intertie	√	√	√
15	Clifton Court Forebay-Tracy Pumping Plant Intertie	No	No	No
CALFED Drinking Water Quality Program				
16	South Bay Aqueduct Improvement and Enlargement Project	√	√	No
17	San Luis Reservoir Low Point Improvement Project	√	√	√
18	CALFED Ecosystem Restoration Program	√	√	√
19	Bay Delta Conservation Plan	No	No	No
20	CALFED Levees Program	√	√	No
21	Franks Track Improvements	√	No	No
22	West Side Drainage Plan	No	No	No
Other CVP/SWP-related Projects				
23	Freeport Regional Water Project	√	√	√
24	Trinity River Mainstream Fishery Restoration Program	√	√	√

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Line	Project	Criterion 1: Is the action under active consideration?	Criterion 2: Would the action be completed or operational within the timeframe being considered for the proposed project?	Criterion 3: Does the action, in combination with the proposed project alternatives, have the potential to affect the same resources?
25	Sacramento Valley Water Management Agreement (Phase 8)	√	√	√
Water Transfer and Acquisition Programs				
26	CALFED Environmental Water Account	√	√	√
27	CALFED Environmental Water Program	√	No	No
28	Delta Improvements Package	√	√	√
Plumas Watershed Projects				
29	Pond and Plug Projects - Sulphur Creek - Last Chance Creek Phase II - Red Clover at Dotta	√	√	√
30	Stream Bank Stabilization and Channel Form Projects - Spanish Creek	√	√	√
Additional Projects				
31	Dry Year Water Purchase Program	√	√	√
32	Governor's Drought Risk Reduction Investment Program	√	No	No
33	CVPIA Water Acquisition Program	√	√	√
34	Contra Costa Water District Alternative Intake Project	√	√	√
35	Long-Term CVP and SWP Operations Criteria and Plan Reconsultation	√	√	√
36	CVP Long-Term Contract Renewals	√	√	√
37	CVP/SWP Integration Proposition	√	√	√
38	City of Stockton Delta Water Supply Project	√	√	√
39	Yuba River Development Project FERC Relicensing	√	No	√
40	San Joaquin River Restoration Settlement Act (Friant Settlement Legislation)	√	No	No
41	Isolated Delta Facility (Peripheral Canal)	√	No	√
42	South-of-Delta Water Banking: Madera Irrigation District Water Banking Project	√	√	√
43	South-of-Delta-Water Banking: Semitropic Water Storage District –Expansion of Groundwater Banking Facilities	√	√	√

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44	Contra Costa Canal Encasement Project (CEQA)/ Contra Costa Canal Replacement Project (NEPA)	√	√	No
45	San Joaquin Valley Drainage Project	√	√	No
46	Folsom Dam Safety and Flood Damage Reduction Project	√	√	No
47	Sacramento River Water Reliability Study	√	√	√
48	CVP M&I Water Shortage Policy	√	√	No
49	Folsom Dam Raise Project	√	√	√
50	Suisun Marsh Levee and Habitat Restoration Program	√	√	√
51	San Joaquin River Recirculation Feasibility Study	√	No	No
52	East Branch Enlargement	√	√	√
52	Lake Perris Seismic Retrofit Project	√	√	√

Notes:
 The decision-making criteria used to determine whether a project should be addressed in the cumulative impact analysis for the Administrative Draft EIR (ADEIR) are listed in columns 2, 3 and 4 above. Projects determined to meet all three of these criteria are included in the more detailed cumulative analysis, which will be discussed in the resource-specific chapters of the ADEIR. For each of the three criteria listed above, a checkmark (√) is used to denote a “yes” decision. Unless otherwise noted above, projects that do not meet all three of the criteria will not be included in the more detailed cumulative analysis discussed in this chapter.

portion of McCloud River that is protected under the California Wild and Scenic Rivers Act, as well as portions of the Pit River and Upper Sacramento River. Other alternatives include modifications to the dam and reservoir reoperations. This project is currently in the planning stages, with an Initial Alternatives Information Report prepared in 2004.

The Shasta Enlargement Project could contribute to cumulative effects on water supplies and associated resources. The project could increase water supplies available for export in those years when Shasta Reservoir otherwise would have spilled. Additionally, this project could modify the timing and magnitude of upstream reservoir releases in wet years. An environmental document for this project has not been issued yet, but is anticipated to be released in 2008.

Sites Reservoir

The CALFED agencies are currently studying several off-stream storage locations including Sites Reservoir, which would be located 70 miles northwest of Sacramento, as possible options for additional storage. With a potential maximum capacity of 1.8 MAF, Sites Reservoir could increase the reliability of water supplies for a large portion of the Sacramento Valley and could improve fish migration by reducing water diversions on the Sacramento River. If this project were implemented, one of its operational benefits would be its ability to store water from high winter flows and release the stored water during the summer months, which could be used to manage salinity and water quality conditions in the Delta.

The Sites Reservoir Project could contribute to cumulative effects on water supplies and associated resources. The project could increase water supplies available for export in those years when export supplies otherwise would be limited. This project also could modify the timing and magnitude of upstream reservoir releases in wet years. An NOP/NOI for this project was issued in November 2001 and public scoping for the environmental document occurred in January 2002. The environmental document and engineering feasibility study for this project are in progress, and are scheduled for completion near the end of 2008.

Delta Wetlands Project

The CALFED Agencies have researched various options for storing water in the Delta. In-Delta storage would increase the reliability, operational flexibility, and water availability for south-of-Delta water users. An in-Delta storage facility could capture peak flows through the Delta during the winter when the CVP and SWP systems do not have the capacity or ability to capture these flows. Water could then be released from the in-Delta reservoirs during periods of export demands, typically during the summer months. Storing additional water in the Delta would provide an opportunity to change the timing of Delta exports and the ability to capture flows during periods when there would be reduced impacts to fish. One option is to lease or purchase the Delta Wetlands Project, a private water development project that would store up to 217 TAF on two islands in the Delta and dedicate two other islands for habitat improvements. As part of the Delta Wetlands Project, Webb Tract and Bacon Island would be converted to reservoirs, and Bouldin Island and Holland Tract would be used as wetland and wildlife habitat. The Delta Wetlands Project was previously analyzed in environmental documents, and permits were issued for the private project in 2001.

In 2006, the Department released a supplemental report to its 2004 In-Delta Storage Draft State Feasibility Report. The 2006 supplemental report identifies other events (e.g., pelagic organism decline, increased focus on seismic instability and global climate change) occurring in the Delta

that will affect water project operations. Decisions required to implement this type of in-Delta project are not expected to be made until after 2008.

Los Vaqueros Reservoir Expansion Project

Reclamation, the Department and the Contra Costa WD are conducting a feasibility study examining alternatives to improve water quality and water supply reliability for Bay Area water users while enhancing the Delta environment, which will include expanding the existing Los Vaqueros Reservoir, as well as a variety of other alternatives. Current work has focused on planning level evaluations of expanding reservoir storage from 100 TAF up to 275 TAF to improve water quality and water supply reliability. An expanded reservoir would require a new or expanded Delta intake, with a capacity of up to about 1,000 cfs for the maximum reservoir size. Locations being considered for the new Delta intake include Old River and adjacent channels. The purposes of the Los Vaqueros Reservoir expansion include increased reliability, water quality, and environmental water supply. A connection to Bethany Reservoir is also currently under study.

The Los Vaqueros Reservoir Expansion Project is in the early planning stage. An Initial Alternatives Information Report was released in 2005 and more recently, a NOI/NOP to prepare an EIS/EIR was released in 2006.

Upper San Joaquin River Storage Project

As part of the Upper San Joaquin River Basin Storage Investigation, Reclamation, the Department and their partners are evaluating the potential for increasing surface water storage in the upper San Joaquin River watershed. Additional storage opportunities ranging from between 250 to 700 TAF could be provided by raising Friant Dam to expand Millerton Lake, or alternate storage options potentially could serve as an equivalent storage program to Friant Dam Enlargement. Depending on its operation, an expanded facility could provide additional reservoir storage capacity for improved flood control and an additional source of water available to help restore and improve aquatic habitats and water quality in the San Joaquin River and the Delta.

The investigation is being undertaken through a two-phased plan of study. Phase 1 is designed to identify water resource opportunities and issues in the Upper San Joaquin River watershed, and includes an appraisal of opportunities to increase surface storage and conjunctive use of groundwater. Phase 2 is designed to provide more detailed analysis and would begin with public meetings to determine the scope of the study. Reclamation and the Department are in the process of preparing a Plan Formulation Report for the Upper San Joaquin River Basin Storage Investigation. Concurrent with this effort, surveys for the environmental document and permit applications also are being performed in the study area. The environmental document and engineering feasibility study for this project are in progress, and are scheduled for completion in 2009.

South Delta Improvement Program (SDIP)

The CALFED ROD identifies the SDIP as an action included in its Programmatic EIS/EIR to address regional and local water supply needs, as well as the needs of the aquatic environment. The SDIP is a project that is proposed by Reclamation and the Department, and includes a series of proposed actions designed to improve water quality and protect salmon in the south Delta while allowing the SWP to operate more effectively. These proposed actions are intended

to maximize diversion capability into Clifton Court Forebay, while providing an adequate water supply for the SDWA and reducing the effects of SWP exports on aquatic resources. The SDIP includes physical/structural improvements as well as operational changes that, together, represent a balanced approach to meeting California's water needs.

The major components of the SDIP include:

- Increasing the maximum allowable diversion capacity at the SWP Clifton Court Forebay;
- Dredging a portion of Old River to improve conveyance capacity;
- Constructing permanent operable barriers to improve water supply reliability and water quality;
- Dredging local channels to reduce the frequency of barrier operations and to accommodate improvements to existing agriculture; and
- Constructing a permanent operable fish control structure at the head of Old River to improve conditions for salmon migrating up and down the San Joaquin River.

CALFED agencies determined that the objectives outlined in the PEIS/EIR could not be met without some of these South Delta improvements.

Reclamation and the Department currently are pursuing the development of environmental compliance documentation for the SDIP, including a joint EIS/EIR and an ASIP. Following completion of the environmental document and regulatory compliance processes, Reclamation and the Department have identified a two-stage decision-making process for the SDIP project. Stage 1 is designed to address the physical/structural improvements, including the new operable gates, dredging and agricultural modifications. At the end of Stage 1, it is anticipated that a decision document (ROD/NOD) would be issued for the physical/structural component of the project. After the Stage 1 decision, it is anticipated that Stage 2 would address the proposed operational component to increase water deliveries south of the Delta, and most likely would involve preparation of supplemental environmental documentation.

8,500 cfs at Banks Pumping Plant

The operational component of the SDIP is designed to optimize the use of the Delta to convey CVP and SWP export water by modifying operations to increase pumping at the SWP Banks Pumping Plant at the head of the California Aqueduct. At this time, authorized pumping is limited to 6,680 cfs. Operational changes proposed by the Department as part of the SDIP would: (1) increase the maximum diversion limit of 6,680 cfs to 8,500 cfs from March 15 to December 15; and (2) modify existing pumping criteria from December 15 to March 15 to allow greater use of SWP export capacity to provide more water for communities, businesses and agricultural users south of the Delta when it is environmentally sound to do so.

The proposed increase in export capacity to 8,500 cfs would allow more water to be moved through the Delta by all acquisition programs during the summer months. Because purchases in the CVP/SWP Upstream of the Delta Region are less expensive per acre-foot than purchases in the Export Service Area, water programs could purchase more water with a fixed amount of money in the CVP/SWP Upstream of the Delta Region.

Rock Slough and Old River Water Quality Improvement Project

Contra Costa WD has completed two important Delta water quality improvement projects that will improve water quality for Contra Costa WD's customers and help the Department manage water resources in the Delta. The projects, known as the CALFED Rock Slough and Old River Water Quality Improvement Projects, each improve water quality for Contra Costa WD's 500,000 customers by re-locating local sources of agricultural drainage that are near Contra Costa WD's water supply intakes. The projects were funded by the California Department of Water Resources (Department) as part of a series of water quality improvement projects being undertaken in the CALFED Bay-Delta Program.

The project in Rock Slough has relocated an agricultural drainage discharge from Veale Tract that historically drained into Rock Slough, one of Contra Costa WD's major sources of water from the Delta. Drainage from Veale Tract is now discharged outside of Rock Slough, where strong currents quickly dilute the drainage without re-directing impacts. Agricultural drainage can contain elevated concentrations of salt and nutrients and is a concern when drains are located near drinking water intakes with little dilution. This project also helps federal and state agencies meet an important water quality standard and allows these agencies to provide better and more efficient operations in the Delta.

A similar project was also completed near the Contra Costa WD's Old River Pump Station, Contra Costa WD's other major source of supply. This project modified an agricultural drain discharge from Byron Tract by lengthening the outfall into Old River to eliminate possible impacts to the Contra Costa WD's source water quality. Previously, the outfall extended only to the immediate bank of the river, where channel velocities are slow and dilution of the discharge was minimal. Now, the discharge extends 150 feet into the middle of Old River, where much higher channel velocities quickly dilute the drainage ensuring no impacts to any other water users or to the Delta ecosystem. Part of the project was completed through a partnership with the Town of Discovery Bay, which also completed a new outfall system for the Town's wastewater discharge. A related but separate phase of this second project, now in the planning stage, would further improve Delta water quality for all Delta users by removing sediments and trace levels of substances such as heavy metals, herbicides, and pesticides from the Kellogg Creek watershed prior to discharge into Old River.

Delta Cross Channel Re-operation and Through-Delta Facility

As part of the CALFED ROD, changes in the operation of the Delta Cross Channel and the potential for a Through-Delta Facility (TDF) are being evaluated. Studies are being conducted to determine how changing the operations of the Delta Cross Canal could benefit fish and water quality. This evaluation will help determine whether a screened through-Delta facility is needed to improve fisheries and avoid water quality disruptions. In conjunction with the Delta Cross Canal operations studies, feasibility studies are being conducted to determine the effectiveness of a TDF. The TDF would include a screened diversion on the Sacramento River of up to 4,000 cfs and conveyance of that water into the Delta.

Both a Delta Cross Canal reoperation and a TDF would change the flow patterns and water quality in the Delta, affecting water quality, fisheries, ecosystems, and water supply reliability. Further consideration of related actions would take place only after completion of several assessments, which are currently in progress.

North Delta Flood Control and Ecosystem Restoration Project

The CALFED ROD identifies the North Delta Flood Control and Ecosystem Restoration Project, which is proposed by Reclamation and the Department, as an implementation action that would provide conveyance, flood control and ecosystem benefits through construction of floodway improvements in the North Delta (such as on the lower Mokelumne River and Georgiana Slough). Potential flood control components being considered include bridge replacement, setback levees, dredging, island bypass systems and island detention systems. The Department and the Corps are conducting a feasibility study to examine potential flood control system improvements that would provide benefits to aquatic and terrestrial habitats and alleviate flood-related problems in the North Delta. In support of the environmental review process, an NOP/NOI was prepared and public scoping was held in 2003. Modeling studies are under preparation, and construction preliminarily scheduled to begin in 2008.

Delta-Mendota Canal/California Aqueduct Intertie

Reclamation is evaluating the potential for the CVP/SWP Intertie, which would consist of the construction and operation of a pumping plant and pipeline connections between the Delta-Mendota Canal and the California Aqueduct. The CVP/SWP Intertie would be used in a number of ways to achieve multiple benefits, including: (1) meeting current water supply demands; (2) allowing for the maintenance and repair of the CVP Delta export and conveyance facilities; and (3) providing operational flexibility to respond to emergencies related to both the CVP and the SWP.

Currently, the average daily pumping capacity at the Jones Pumping Plant is limited to a maximum of 4,600 cfs, which is the existing capacity of the upper Delta-Mendota Canal and its intake channel. However, because of conveyance limitation in the lower Delta-Mendota Canal and other factors, pumping at the Jones Pumping Plant is almost always less than 4,600 cfs. Delta-Mendota Canal conveyance capacity is affected by: (1) subsidence; (2) canal siltation and deposition; (3) the amount, timing, and location of water deliveries from the Delta-Mendota Canal; (4) facility design; and (5) other factors. By connecting the upper Delta-Mendota Canal with the California Aqueduct, the CVP/SWP Intertie would allow year-round CVP Jones pumping up to 4,600 cfs, subject to all applicable export pumping restrictions for water quality and fisheries protections. CVP Jones capacity would remain limited to its existing authorized pumping capacity of 4,600 cfs. This project was included in Reclamation's OCAP and a Draft EIS is expected to be available in fall 2007.

San Luis Reservoir Low Point Improvement Project

Reclamation and Santa Clara Valley WD are pursuing an evaluation of the San Luis Reservoir Low Point Improvement Project, which would use one, or a combination of alternatives, including treatment options, bypasses, and other storage options to reduce the risk of "low point" water levels. When water levels in San Luis Reservoir are low, high water temperatures combined with wind induced mixing result in algal blooms at the reservoir's water surface. This condition degrades water quality, making it difficult or impractical to treat the water, and can prevent deliveries from San Luis Reservoir. To solve the low point problem, Reclamation and the Department have operated the reservoir to maintain water levels above the critical low elevation, or low point, requiring approximately 200 TAF of water to remain as "carry-over" in the reservoir.

Given likely growth in future water demands, and additional regulatory requirements, it is anticipated that storage in San Luis Reservoir would be more fully exercised and result in more frequent and lower late-summer storage levels in the reservoir. Alternatives being considered to address water quality issues related to the low point problem and to increase the effective storage capacity in the reservoir include but are not limited to: (1) a bypass to the San Felipe Unit around San Luis Reservoir; (2) treatment options such as dissolved air flotation; (3) algae harvesting or application of algaecides; (4) lowering the San Felipe Division intake facilities; and (5) expansion of Pacheco Reservoir.

An NOI/NOP to prepare an EIS/EIR was released in 2002, and an Appraisal Report for the Low Point Improvement Project was issued in 2006. The Appraisal Report recommends that a federal feasibility study be initiated to further study potential measures for resolving these water-related issues and, thus, the project is currently in the planning stages.

CALFED Ecosystem Restoration Program

The goals of the CALFED Ecosystem Restoration Program (ERP) are to:

- Facilitate the recovery of 19 at-risk native species and contribute to the recovery of 25 additional species;
- Rehabilitate natural processes related to hydrology, stream channels, sediment, floodplains and ecosystem water quality;
- Maintain and enhance fish populations critical to commercial, sport and recreational fisheries; Protect and restore functional habitats, including aquatic, upland and riparian, to allow species to thrive;
- Reduce the negative impacts of invasive species and prevent additional introductions that compete with and destroy native species; and
- Improve and maintain water and sediment quality to better support ecosystem health and allow species to flourish.

The ERP Plan, which is divided into the Sacramento, San Joaquin, and Delta and Eastside Tributary regions, includes the following kinds of actions:

- Develop and implement habitat management and restoration actions, including restoration of river corridors and floodplains, reconstruction of channel-floodplain interactions, and restoration of Delta aquatic habitats;
- Restore habitat that would specifically benefit one or more at-risk species;
- Implement fish passage programs and conduct passage studies;
- Continue major fish screen projects and conduct studies to improve knowledge of their effects;
- Restore geomorphic processes in stream and riparian corridors;
- Implement actions to improve understanding of at-risk species;
- Develop understanding and technologies to reduce the impacts of irrigation drainage on the San Joaquin River and reduce transport of contaminant (selenium) loads carried by the San Joaquin River to the Delta and the San Francisco Bay; and
- Implement actions to prevent, control, and reduce impacts from nonnative invasive species.

ERP actions will contribute to cumulative benefits on fish and wildlife species, habitats, and ecological processes.

Freeport Regional Water Project

The East Bay Municipal Utilities District (EBMUD) has entered into a partnership with the Solano County WA to design and build a regional water supply project that would assure water for East Bay customers in dry years and needed water for the Sacramento region. EBMUD's Mokelumne River water supply is adequate to meet the water supply needs of the district's 1.3 million customers in normal and wet years, but in prolonged droughts, customers face severe rationing. Through the project, EBMUD customers' drought year cutbacks would be reduced.

In 2002, EBMUD and the County of Sacramento (in association with the City of Sacramento and with support from Reclamation) formed the project, which is responsible for the joint effort to draw water from the Sacramento River near the town of Freeport. The Draft EIR was published in 2003 and the Final EIR was published and certified in 2004. Reclamation issued the ROD in January 2005.

The following elements were approved under the 2004 EIR and subsequently refined through supplemental CEQA documents in 2006:

- A new 185 mgd water intake structure and pump station on the Sacramento River near Freeport;
- A new large diameter pipeline to transport water eastward to the new Solano County WA WTP and the existing Folsom South Canal to supply EBMUD customers;
- A new WTP in central Sacramento County, owned and operated by Solano County WA, which would provide treated surface water supplies to the Sacramento area; and
- A new pumping facility and large diameter pipeline would treat and transport water from the southern end of the Folsom South Canal to EBMUD's Mokelumne Aqueduct for use by EBMUD customers.

This program is included in the 2004 OCAP consultation.

Trinity River Mainstream Fishery Restoration Program

The purpose of this program is to alleviate impacts to fish due to deliveries of CVP water from the Trinity River. The Draft EIS for the Trinity River Mainstream Fishery Restoration Program was issued in October 1999, the Final EIS was issued in November 2000, and the ROD was signed in December 2000. Westlands WD filed suit against the Interior to enjoin it from implementing the ROD, which would increase the flow of water to the Trinity River, resulting in less water being imported from the Trinity River at Lewiston Dam to the Central Valley. Under the ROD, Interior would boost water flows on the lower Trinity to an average of 595 TAF annually, compared to the roughly 340 TAF previously retained in the river. Implementation of ROD was delayed due to litigation and completion of a Supplemental EIS (SEIS). A Draft SEIS was published in April 2004, however work on the SEIS was suspended pending resolution of court proceedings. In November 2004, the U.S. Court of Appeals denied the petitions for rehearing filed by Westlands WD and the Northern California Power Agency. The SEIS will not be completed and the ROD is now being implemented. This program is included in the 2004 OCAP consultation.

Sacramento Valley Water Management Agreement (Phase 8)

The short-term phase of the Sacramento Valley Water Management Program (SVWMP) resolves water quality and water rights issues arising from the need to meet the flow-related water quality objectives of the 1995 Bay-Delta WQCP and the SWRCB's Phase 8 Water Rights Hearing process. In addition, the Short-Term Program would promote better water management in the Sacramento Valley and develop additional water supplies through a cooperative water management partnership. Program participants include Reclamation, Department, Northern California Water Association, San Luis & Delta-Mendota Water Authority, some Sacramento Valley water users, and CVP and SWP contractors. Short-Term Program actions would be locally proposed projects and actions that include the development of groundwater to substitute for surface water supplies, conjunctive use of groundwater and surface water, refurbishing existing groundwater extraction wells, installing groundwater monitoring stations, installing new groundwater extraction wells, reservoir reoperation, system improvements such as canal lining, tailwater recovery, and improved operations, and surface and groundwater planning studies. These short-term projects and actions would be implemented for a period of 10 years in areas of Shasta, Butte, Sutter, Glenn, Tehama, Colusa, Sacramento, Placer, and Yolo counties. The NOI/NOP was published on August 5, 2003.

CALFED Environmental Water Account

The EWA Program is a "cooperative management program whose purpose is to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes in the operations of the CVP and the SWP, at no uncompensated water cost to the CVP/SWP Projects' water users. The EWA is intended to provide sufficient water, combined with the Ecosystem Restoration Program and the regulatory baseline, to address CALFED's fishery protection, and restoration/recovery needs." As reported in the 2005 EWA Acquisition Strategy Report, EWA assets also have been used in limited ways to provide fish benefits upstream of the Delta during some years. The EWA Program's approach to fish protection requires the acquisition of alternative sources of CVP/SWP water supply, called "assets," which are used to augment stream flows and Delta outflows, to modify exports to provide fishery benefits, and to repay the CVP/SWP contractors whose supplies have been interrupted by actions taken to benefit fish (70 FR 8605). The EWA Program was initially designed as a short-term program, and its continued use as a long-term management tool is being considered by the EWA Agencies.

The existing EWA Program will sunset on December 31, 2007. Currently, the Department and Reclamation plan to temporarily extend the existing EWA Program, and they are in the process of developing supplemental environmental documentation for this extension of the program that is anticipated to be released by the end of the year. While it is uncertain at this time whether a long-term EWA Program or a program equivalent to the EWA will be implemented in the future, or what the elements of such a program will be, the best assumption that can be made at this time is that an equivalent program would continue, with conditions similar to those for the existing EWA Program.

Delta Improvements Package

The Delta Improvements Package outlines actions related to water project operations in the Delta that would result in increased water supply reliability, improved water quality,

environmental protection and ecosystem restoration, protection of the Delta Levee system, and analyses and evaluation to support improved real-time and long-term management.

The Delta Improvements Package also outlines conditions under which the SWP would be allowed to increase its permitted export pumping capacity from 6,680 cfs to 8,500 cfs. In addition to the commitments in the CALFED ROD to avoid adverse fishery impacts and to protect in-Delta water supply reliability, these conditions include:

- Construction of permanent operable barriers in the South Delta;
- Development of a salinity management plan for the San Joaquin River;
- Improvements to protect water quality near the Contra Costa Canal;
- Environmental protection for important native fish species, including implementation of the Ecosystem Restoration Program; and
- Development of a long-term EWA (or a program equivalent to the EWA).

Plumas Watershed Projects

Pond and Plug Projects

The pond and plug technique removes material from the gully forming the pond and that removed material is used to form the plug, therefore the gully is filled with alternating ponds and plugs; the stream is then put into existing remnant channels or constructed channels on the historic floodplain. This method reduces erosive forces, raises the meadow water table, and restores function to the stream and meadow complex.

Sulphur Creek - There are six similar projects of various scale on Sulphur Creek to be done using a phased approach. Sulphur Creek is a deeply entrenched channel with an extremely high sediment load which causes increased bank erosion and meadow dewatering. The intent of this restoration project is to arrest the sediment load moving down the Sulphur Creek channel, obliterate the gully and reconnect the stream with its historic floodplain.

Last Chance Creek Phase II - Last Chance Creek is an incised channel in a stream and meadow complex. This stream is experiencing bank erosion and meadow dewatering. The intent of this restoration project is to obliterate the gully, raise the meadow water table and reconnect the stream with its historic floodplain.

Red Clover at Dotta - Red Clover Creek is an incised channel in a stream and meadow complex. This stream is experiencing bank erosion and meadow dewatering. The project intent is gully obliteration and to restore meadow function which will help to maintain stream base flow.

Stream Bank Stabilization and Channel Form Projects

A variety of treatment techniques are used to stabilize stream channels in incised systems. Rock vanes are used on stream meander bends to force flows away from banks. Channel constrictions using large woody debris and rock in the sections of streams between meander bends and directs flows toward the center of the channel transporting sediment. Gravel bars which can increase erosional forces are contoured to create a floodplain in the gully dissipating stream energy and vertical banks are laid back to increase channel capacity and stability. These techniques are used in concert with vegetation and biotechnical erosion controls to further strengthen banks.

Spanish Creek - There are thirteen projects in the Spanish Creek watershed that will use these stream bank stabilization and channel form techniques. These projects are of various size and scale and are to reduce bank erosion, increase sediment transport, and halt channel migration through Meadow and American valleys.

Dry Year Water Purchase Program

In mid-January 2001, several CVP and SWP contractors requested that Reclamation and the Department initiate planning for a dry year water acquisition program, based on the dry year hydrology to date. The Department announced the 2001 Dry Year Water Purchase Program (Dry Year Program) in March 2001. This program was the first dry year acquisition program by the Department since the 1991, 1992, and 1994 Drought Bank programs. The Dry Year Program was implemented again in 2002 through 2004, and may be activated in the future to help public agencies throughout California supplement their water supplies in dry years.

The program intends to reduce the possibility of any hardship associated with water shortages through the facilitation of water transfers, and it is open to CVP contractors, SWP contractors, and third party users. In 2001, the Department provided 138.8 TAF of water from willing sellers in Northern California to eight SWP contractors. In 2002, the Department secured 22 TAF of water from willing sellers in Northern California and provided it to four water agencies throughout the state. In 2003 and 2004, the Department purchased very little water under the program.

Transfers negotiated between CVP and SWP contractors and other water users, such as the 2001 CVP Forbearance Agreement with Westlands WD and the 2003 crop idling acquisition by MWD from water agencies upstream of the Delta as part of its Colorado River Contingency Plan, are parts of the Dry Year Program. The mandatory reduction in California's use of Colorado River⁵ water could increase demand for water upstream of the Delta, and increase acquisitions under the Dry Year Program.

CVPIA Water Acquisition Program

Section 3402 of the CVPIA identifies the purposes of the CVPIA as protection, restoration, and enhancement of fish, wildlife, and associated habitats in the Central Valley. The CVPIA provides for the acquisition of water for protecting, restoring, and enhancing fish and wildlife populations. To meet water acquisition needs under the CVPIA, the Interior has developed a joint Reclamation and USFWS Water Acquisition Program.

The CVPIA requires the provision of firm water supplies to specified National Wildlife Refuges, State Wildlife Areas, and private wetlands in the Grassland Resource Conservation District for the purpose of optimum habitat management on the refuge lands³. CVPIA Section 3406(d)(1) requires that the Secretary of the Interior immediately provide specific quantities of water to the refuges and indicates that long-term contractual agreements should be developed for water provided. These are referred to as "Level 2" supplies, for which Reclamation and Interior entered into long-term water supply agreements/contracts with USFWS and CDFG. The CVPIA requires full delivery of this water in all year types except critically dry water years, as determined by Reclamation for allocation of CVP water. In the case of a critically dry water year, the Secretary of the Interior may reduce Level 2 refuge water supplies by up to 25 percent.

Section 3406(d)(2) of the CVPIA refers to “Level 4” refuge water supplies, which are the supplies required for optimum habitat management of the existing refuge lands identified in the “1989 Report on Refuge Water Supply Investigations.” The CVP must acquire the increment of water between Level 2 and Level 4 supplies from willing sellers. Section 3406(d)(2) requires that, upon enactment of the CVPIA, Level 4 water be provided in 10 percent cumulative increments per year with provision of full Level 4 supplies after 10 years. Reclamation has been acquiring Level 4 water on a short-term basis from willing sellers since 1993. Meeting Level 4 requirements requires the annual acquisition of an additional 133,264 AF above Level 2 water supplies.

Refuge water acquisitions are primarily from CVP contractors, and delivery is typically taken at O’Neill Forebay for delivery to the refuges in the San Joaquin Valley. In recent years, acquired water to meet Level 4 needs has averaged between 70 TAF to 80 TAF. Coordination among the CVPIA Water Acquisition Program, the EWP, and EWA requires Reclamation, USFWS, and other CALFED agencies to determine how to address individual program goals while pursuing joint acquisitions.

Contra Costa Water District Alternative Intake Project

The Alternative Intake Project is a drinking water quality improvement project proposed for implementation by the Contra Costa WD and Reclamation. For extended periods each year, Delta water quality at Contra Costa WD’s exiting intakes does not meet Contra Costa WD adopted water quality objectives, thus requiring Contra Costa WD to use higher quality water stored in Los Vaqueros Reservoir to blend with the diverted Delta water. To ensure that state and federal regulatory requirements for drinking water and the water quality objectives can be met now and in the future, Contra Costa WD is proposing to relocate some of its existing diversions to Victoria Canal, a location in the Delta that has higher quality source water than that which is currently available at Contra Costa WD’s Old River and Rock Slough intakes, to improve the quality of both its source and delivered water. Although the new intake would change the location, timing and quality of some of Contra Costa WD’s diversions, Contra Costa WD is not seeking to increase its water rights, CVP contract amounts, or permitted Los Vaqueros Reservoir filling rates. A Draft EIR/EIS was released in May 2006; the Final EIR/EIS was released in October 2006.

Long-Term CVP and SWP Operations Criteria and Plan Reconsultation

The Long-term OCAP serves as the operational standard by which Reclamation operates the integrated CVP/SWP system. The OCAP describes how Reclamation and the Department operate the CVP and the SWP to divert, store, and convey water consistent with applicable law. Reclamation and the Department completed an update to the OCAP in 2004 to reflect recent operational and environmental changes occurring throughout the CVP/SWP system. Additionally, Reclamation received BOs from the USFWS and NMFS in 2004 and 2005. The terms and conditions specified in the USFWS and NMFS BOs establish the instream habitat conditions and operational requirements that Reclamation and Department must maintain as part of integrated CVP/SWP operations. For these reasons, the OCAP provides the basis for the hydrologic modeling assumptions and the comparative analytical simulations that were performed as part of the hydrologic assessment of effects on resources in this EIR/EIS. The 2004 OCAP included specific projects such as the CVP/SWP Intertie, the Freeport Regional Water Project, and the Trinity River Mainstream Fishery Restoration Program, as described herein.

Due to numerous changed circumstances since the 2004/2005 OCAP consultation, Reclamation has requested re-initiation of Section 7 ESA consultation on OCAP with both NMFS and USFWS. In a letter to NMFS dated April 2006, and clarified in May 2006, Reclamation requested initiation of early and formal consultation on the effects of long-term CVP and SWP operations on all federally listed species and critical habitat which may be affected by those operations, to include the newly designated critical habitat for Central Valley steelhead, Central Valley spring-run Chinook salmon, and Central Coast steelhead. Reclamation also requested initiation of conferencing on the effects of the OCAP on the federally threatened southern DPS of North American green sturgeon, which would convert into a formal and early consultation following the effective date of the final rule designating its status (i.e., July 2006). In addition, in a letter dated July 2006, Reclamation also requested re-initiation of formal consultation on the OCAP from the USFWS. The major reason for this re-initiation was changed circumstances regarding delta smelt populations, particularly related to new and constantly emerging information stemming from the POD study effort in the Delta. At this time, a date for the completion of these consultations is unknown.

CVP Long-Term Contract Renewals

There are approximately 250 long-term water service contracts that are dependent upon CVP operations to receive water for agricultural, or M&I uses. Most of these contracts extend for a term of 40 years, and were scheduled to expire in 2004 or subsequent dates prior to 2029. Water needs assessments were performed for each CVP water contractor eligible to participate in the CVP long-term contract renewal process. The water needs assessments confirmed a contractor's past beneficial use and determined future CVP water supplies needed to meet the contractor's anticipated future demands. These assessments were based on a common methodology used to determine the amount of CVP water required to balance a contractor's water demands with available surface and groundwater supplies. In 2005 and 2006, Reclamation issued decisions (ROD and a Finding of No Significant Impact [FONSI]) for renewing contracts of the Sacramento River Division, the Sacramento River Settlement Contracts, the Delta-Mendota Canal Division, the Friant Division and several individual contracts. Preparation of environmental documents for other divisions and contracts are ongoing, and are expected to be completed following Reclamation's ESA reconsultation on the 2004 OCAP BA.

CVP/SWP Integration Proposition

Reclamation, the Department, and SWP contractors have proposed increasing the integration of CVP and SWP operations by maximizing the existing and proposed SWP conveyance capacity (including the implementation of the SDIP) of both CVP and SWP supplies. Under the proposal, the state would have the primary responsibility for delivering water to federal wildlife refuges, which would allow for increased supply flexibility, particularly south of the Delta. The CVP would be increasingly responsible for maintaining Delta water quality, and CVP facilities would be used to store additional water in Northern California for SWP customers. The proposal is also structured to allow for supporting the continued implementation of the EWA Program or a program equivalent to the EWA.

City of Stockton Delta Water Supply Project

The Delta Water Supply Project (DWSP) would involve development of a new supplemental water supply for the City of Stockton by diverting water from the San Joaquin River, treating the Delta water at a new water treatment plant, and distributing the treated water for municipal and

industrial uses. The DWSP would consist of a surface water diversion/intake facility, a new raw water conveyance pipeline, a new water treatment facility, and treated water transmission pipelines to deliver water to the City's existing water distribution system. The project also would include a groundwater recharge component. Treated surface water would be injected into the groundwater aquifer for storage until it is needed, and then would be pumped or "recovered" from the groundwater aquifer for use.

The Final EIR was completed in 2005. Construction is anticipated to begin in 2008, and the first phase (including the water treatment plant) of the project is scheduled for completion by 2010.

Madera Irrigation District Water Banking Project

The Madera Irrigation District (MID) is in the process of developing the Madera Water Supply and Groundwater Enhancement Project in an effort to help reduce drought impacts in the San Joaquin Valley. MID has purchased a 13,648-acre ranch, which would be used for the project. Under this proposed project, pumping facilities would convey MID water to the ranch, where the water would be allowed to percolate and form a 'water bank' beneath the ranch. Banked water could be pumped and used locally when supply is low, providing a key regional water supply benefit. The project would help MID in its efforts to conserve and more efficiently use its local and CVP water supplies.

Reclamation published a Draft EA/FONSI for the Pilot Recharge and Recovery Project at Madera Ranch in February 2007. The proposed action consists of the pilot recharge and recovery of up to 11 TAF per year of Madera's Friant Division CVP water between February 2007 and April 2009. The recharged water would eventually be recovered by pumping groundwater using existing wells within district boundaries (Madera Ranch property overlies the recovery area). Approval of these actions would allow Madera to use its 2006-2009 Friant Division allocations to collect data on recharge rates and groundwater hydrology in the area, thereby supplementing evaluations made about the suitability of the area for future recharge and banking operations.

Semitropic Water Storage District – Expansion of Groundwater Banking Facilities

Semitropic Water Storage District (SWSD) has obtained the necessary permits to initiate construction of a second phase of its groundwater banking program. The new facility, called the Stored Water Recovery Unit, is designed to increase the storage capacity of the groundwater banking project by 650 TAF to a maximum of 1.65 MAF, and would increase recovery capacity by 200 TAF per year, for a total guaranteed or pumpback capacity of 290 TAF per year (SWSD Website 2004). Including its entitlement exchange capability of up to 133 TAF per year, the SWSD Water Storage Bank would be able to deliver up to 423 TAF per year of dry year yield to the California Aqueduct.

Through a separate action, Reclamation has analyzed and proposes to approve a water transfer, groundwater banking and exchange project that would provide up to 15 TAF of water per year to the SWSD on behalf of Westlands WD. The exchange could occur in one of three ways: (1) Westlands WD would exchange the requested amount of banked water for an equal amount of SWSD's allocation of SWP Table A water; (2) Westlands WD would exchange the requested amount of banked water for an equal amount of CVP water; or (3) SWSD would pump groundwater stored on behalf of Westlands WD into the California Aqueduct. The return of the water (up to 15 TAF) stored and credited within SWSD bank would be returned to

Westlands WD via exchange within the next 10 years, subject to applicable CVP contractual requirements.

Additional opportunities for new water banking partners to share in the benefits of the Stored Water Recovery Unit are available. Future partners could include existing banking partners, public agencies, and the EWA Program.

Sacramento River Water Reliability Study

The purpose of the SRWRS is to develop a water supply plan that is consistent with the Water Forum objectives of pursuing a Sacramento River diversion to meet the water supply needs of the Placer-Sacramento region and to promote ecosystem preservation along the lower American River. Reclamation is preparing the SRWRS with the cost-sharing partners: Placer County Water Agency (PCWA), City of Sacramento, City of Roseville, and Sacramento Suburban Water District (SSWD). The NOI and NOP for preparation of a joint EIS/EIR were issued in July and August 2003, respectively. Reclamation is the lead agency under NEPA, and PCWA is the lead agency under CEQA.

To meet the water supply needs of the cost-sharing partners, the SRWRS will identify a package of water supply infrastructure components, including new or expanded diversion(s) from the Sacramento, Feather, or American rivers, and new or expanded water treatment and pumping facilities, storage tanks, and major transmission and distribution pipelines. The additional water supplies considered in the SRWRS for each cost-sharing partner include: (1) additional water supply of up to 35 TAF for PCWA's M&I demand with a treatment capacity of 65 million gallons per day (mgd), (2) additional water supply of up to 29 TAF in Water Forum average, drier, and driest years for SSWD's M&I demand and groundwater stabilization program with a treatment capacity of 15 mgd, (3) additional water supply of up to 7,100 AF for the City of Roseville's M&I demand with a treatment capacity of 10 mgd, and (4) additional water supply of up to 58 TAF with a water treatment capacity of 165 mgd for the City of Sacramento's M&I demand.

Folsom Dam Raise Project

In February 2002, the Corps issued the Supplemental Plan Formulation Report/EIS/EIR for the American River Watershed, California, Long Term Study, which describes, analyzes, and reports impacts of flood damage reduction and ecosystem restoration along the American River, and includes the Corps' proposal to raise Folsom Dam seven feet to reduce the Sacramento area's flood risks. Study of the American River Watershed was initially authorized in the Flood Control Act of 1962 (PL 87-874) with direction from Congress given to the Corps to survey for flood control and allied purposes.

The feasibility study was conducted in coordination with the Reclamation Board and SAFCA as the non-federal sponsors. This study supplements the 1996 Supplemental Information Report and the 1991 Feasibility Report for the American River Watershed Investigation. This document and its technical appendices support decision-making by the Corps and the non-federal sponsors, which include the Reclamation Board and SAFCA. In May 2006, the Corps issued the Public Draft SEIS/EIR and the Post Authorization Decision Document for the Folsom Dam Raise, Folsom Bridge portion of the American River Project.

Construction of Folsom Bridge is scheduled to begin in fall.

East Branch Enlargement Project

The Department proposes Phase II of the East Branch Extension of the California Aqueduct, which would involve construction of new supporting facilities and enhancement of an existing pump station in western San Bernardino County within the cities of Redlands and Highland and the unincorporated community of Mentone. The project would connect the San Bernardino Valley MWD's existing Foothill Pipeline to the existing Crafton Hills Pump Station to increase the capacity of deliveries of SWP water to the San Geronio Pass WA and San Bernardino Valley MWD service areas. With implementation of the East Branch Enlargement project, the capacity of the East Branch Aqueduct would increase from 50 cfs to 150 cfs. The proposed project would increase water deliveries through the system by 8,650 AFY.

Lake Perris Seismic Retrofit Project

Beginning in 2005, water levels in Lake Perris were drawn down for a seismic retrofit of the dam. The Department is initiating repairs to the dam which include replacing the foundation material and reinforcing it with a stability berm placed on top of the improved foundation. This will allow the lake to return to its previous maximum operating pool elevation after construction. Other aspects of the repair plan include constructing a new outlet tower and emergency outlet release facility. Construction is estimated to begin in the fall of 2008. Dam completion is expected by fall 2010. All projects concerning the Perris Dam are anticipated to be complete by fall 2012.

10.1.3 Cumulative Impact Analysis

If a technical issue area included a project-specific impact as a result of implementation of the proposed project, a cumulative context is presented. The context of the cumulative analysis varies by technical issue area. For example, air quality impacts are evaluated against conditions in the relevant air basin. Because the proposed project area includes the State-wide SWP service area, it is geographically broad. Therefore, the cumulative context for each technical issue area is further defined by the specific geographic area affected by project implementation including: the southern San Joaquin Valley (including Kern County and the Kern Fan Element); SWP reservoirs including Castaic Lake, Lake Perris, San Luis Reservoir and Lake Oroville; the Sacramento and Feather rivers, the Sacramento-San Joaquin Delta and Plumas County. Then the cumulative impact analysis takes into consideration whether the projects listed in Table 10.1-1 in combination with the proposed project would have the potential to affect the same resources. If there is not a combined effect then a finding of no impact is made. If there would be a combined effect, then a determination is made if that combined effect would: (1) result in a significant cumulative effect; and (2) if the proposed project's contribution to the effect would be considerable. Finally, a determination is made as to whether mitigation measures recommended for the project-specific impact would reduce the proposed project's contribution to the cumulative impact to a less-than-significant level; therefore, resulting in a less-than-significant cumulative impact.

The cumulative impact analysis is presented by technical issue area.

Surface Water Hydrology, Water Quality, and Water Supply

The cumulative context for surface water hydrology, water quality and water supply includes the Feather and Sacramento rivers and the Sacramento-San Joaquin Delta.

10.1-1 Implementation of the proposed project in combination with cumulative water development projects could potentially affect river flow in the Feather and Sacramento rivers and outflow from the Delta to the San Francisco Bay

Sacramento and Feather Rivers

The proposed project would have a less than 0.15 percent effect on flows in the Sacramento and Feather rivers, an essentially immeasurable change. Flow in the Feather River in the future would be affected by future operations of the SWP which will alter as demand increases in the SWP service area and new reservoirs (Sites Reservoir, Upper San Joaquin River Reservoir) are added to the SWP. Flow in the Sacramento River in the future would be affected by future operations of the SWP and the CVP as water demand grows and an enlarged Shasta Reservoir is incorporated into the systems. Future flow changes from these actions could be large, much larger than those attributable to the proposed project. Flows may be increased or decreased and their seasonal pattern altered. No significance determination was made with respect to cumulative flow changes in the Sacramento and Feather rivers or for the flow changes produced by the proposed project. However, the proposed project's contribution to flow changes would not be considerable.

Sacramento-San Joaquin Delta

The proposed project would increase diversions by the SWP from the Delta by an average of 50,000 AF per year and would reduce Delta outflow by a like amount. This reduction represents about 0.35 percent of average annual Delta outflow.

Many of the future projects and programs listed in Table 10.1-1 have the potential to affect flows in the Delta. New water storage projects would increase the capture of water during the rainy season and during snowmelt. The overall effect of the projects would be to reduce inflow to the Delta and Delta outflow in late winter and spring. Inflow to the Delta would increase in the summer as water was released from reservoirs to flow to the pumps in the Delta. Delta outflow in the summer would probably not change much because environmental regulations already limit diversions from the Delta and prescribe objectives for Delta outflow.

The increased diversions from the Delta attributable to the proposed project would occur in the wetter months of wet years and would reduce Delta outflow at such times. Water to meet future demand and to fill the new reservoirs would also reduce Delta outflow in the wetter months of wet years but the effects are likely to be much greater than those of the proposed project. For example, the SWP expects to divert about 220,000 AF more water from the Delta in 2020 than it did in 2003 just to meet growing demand in its service area. No significance determination was made with respect to cumulative flow changes in the Delta or for the flow changes in the Delta produced by the proposed project. However, the proposed project's contribution to flow in the Delta changes would not be cumulatively considerable.

Impact Summary

Future projects and actions (including the proposed project) that substantially alter flow in the Sacramento and Feather rivers and Delta inflow and outflow could produce changes in water quality. Flow related changes in water quality together with storm water and treated wastewater discharges from new urban development in the Sacramento and Feather river watersheds and the Delta could have a potentially significant cumulative impact on water quality.

However, because the proposed project would contribute less than 0.15 percent to the total cumulative change in flows in the Sacramento and Feather rivers, and approximately 0.35 percent of average annual Delta outflow, the project's contribution to decreased water quality would not be considerable and this would be a less-than-significant cumulative impact.

Mitigation Measures

None required.

Groundwater Hydrology and Water Quality

The cumulative context for ground water hydrology and water quality is the groundwater basins underlying the San Joaquin Valley.

The effects of the proposed project would be to raise water levels in some groundwater subbasins in Kern County as a result of storage of water in the Kern Water Bank and storage of SWP water by contractors outside their service areas, a modestly beneficial effect. The proposed project would have a negligible effect on groundwater quality and would not contribute to cumulative effects on water quality. Because there would be no adverse impact, there would be no combined effect with other cumulative projects. Therefore, ***no cumulative impact*** would occur.

Fisheries Resources

The cumulative context for fisheries resources includes the Feather and Sacramento rivers and the Sacramento-San Joaquin Delta.

There was no project-specific impact on fisheries identified in the American and San Joaquin rivers, and therefore, there would be ***no cumulative impact***.

10.1-2 Implementation of the proposed project in combination with cumulative water development projects could potentially affect special-status fish species in the Sacramento-San Joaquin Delta due to Delta export changes.

Increased cumulative exports from the Delta could change Delta flow patterns, disrupt movement of species of fish, and increase entrainment losses of adult smelt and salmonid smolts. The actual magnitude of this impact depends on the Delta outflow and the relative reduction generated by increased exports. The fishes most susceptible to November-March hydrodynamic changes and export increases are out-migrating salmonids and smelt moving upstream to spawn. Increased entrainment of a special-status species that resulted from the proposed project in combination with other cumulative projects would reduce a species' abundance. Disruption of upstream or downstream migration could be considered an interference with the movement of resident and migratory species. This would result in a potentially significant cumulative impact.

For the 1996 – 2003 analysis, CALSIM II simulations analyzed the effects of export changes from Table A transfers and retirements, and altered water allocation procedures. These changes could affect Delta exports. Deliveries to contractors south of the Delta vary annually depending on hydrology and reservoir storage. Total deliveries to contractors south of the Delta would be estimated to decrease by an annual average of about 34,000 AF.

Because CALSIM II does not model the water supply management practices provided for in the Monterey Amendment, an additional analysis was conducted based on historical data from 1996 through 2004. The estimated effects of nearly all of the Monterey Amendment provisions, including the Table A retirements and the water supply management practices, on Delta exports between 1996 and 2004 were determined by a historical operations analysis, described in more detail in Chapter 6 and Appendix K. Monterey Amendment-induced changes in SWP operations and deliveries to SWP contractors are described in Chapters 6 and 7.

The Department estimates that from 1996 to 2004, the water supply management practices resulted in the SWP pumping a total of about 44,000 AF more at the Banks Pumping Plant than it would have under the baseline scenario. Thus, from 1996 to 2004, these Monterey Amendment provisions increased Delta exports and reduced Delta outflow by a total of about 44,000 AF.

However, as mentioned in the fisheries section (Impact 7.3-5, 1996 – 2003), the Department prior to and during the inception of the proposed project in 1996, has been operating the SWP and all its subsidiary facilities (including Banks) in accordance with all environmental legal constraints. The environmental constraints that were pertinent for any given time from 1996 to 2003 would have mitigated for any additional pumping due to the proposed project in the Delta, this would include the proposed project and its water supply management practices. The Department believes that the environmental agreements developed with DFG during the 1996-2003 timeframe were sufficient to protect Delta species from the impacts of pumping and satisfy any statutory requirements. In addition, the Banks pumping curtailments to address federal ESA concerns in 1996, 1997, 1999, and 2000 provided some added fish benefits. Beginning in 2000, the EWA Program provided a real-time adaptive management response to fish distribution, abundance, and salvage in the Delta.

The following lists mitigation and environmental programs already in place that were relevant to the SWP (thus the proposed project) and Delta fisheries covered by the federal biological opinions for the 1996-2003 timeframe:

1. CALFED Agreement and Bay-Delta Accord,
2. The Water Right Decision 1641 issued by the Regional Water Quality Control Board,
3. ESA-related Banks pumping curtailments,
4. The EWA (initiated in late 2000),
5. The Anadromous Fisheries Biological Opinion of 1995 (this was later superseded by one in 2004),
6. The Delta Pumping Plant Fish Protection Agreement, and
7. The Delta Smelt Biological Opinion of 1995 (this was later superseded by one in 2005).

The standards of significance established for this proposed project require that a significant impact be identified for any proposed project-related action that will have a substantial adverse effect, either directly or through habitat modifications, on any species protected under the State or federal Endangered Species acts or considered a candidate, or special-status by the USFWS, CDFG, or NOAA Fisheries. Considering the Department's relevant SWP legal environmental compliance, the proposed project's impact to special-status fish species in the Sacramento-San Joaquin Delta from 1996 to 2003 would have been a less-than-significant cumulative impact.

Delta exports to contractors south of the Delta can be affected both by the altered allocation procedures and Table A transfers and retirements, and by the water supply management practices. The future effects of these two sets of Monterey Amendment provisions are evaluated in two separate analyses, using CALSIM II and historical data.

The retirements and transfers of Table A amounts and altered water allocation procedures that are a part of the proposed project would change both the total quantity of SWP water delivered and the quantities of SWP water delivered to individual contractors. These changes in deliveries could affect Delta exports. Deliveries to contractors south of the Delta vary annually depending on hydrology and reservoir storage. For the future conditions, total deliveries to contractors south of the Delta would be estimated to decrease by an annual average of about 23,000 AF.

Contractors took advantage of the water supply management practices from 1996 to 2004 and would be expected to continue to employ all or most of them in the future. Because the water supply management practices were actually used from 1996 to 2004, an analysis of the effects of these water supply management practices in that historical period offers insight into their likely future effects.

The Department conducted a historical water supply management practices analysis to determine whether they would have resulted in increased pumping at the Banks Pumping Plant. This analysis differs from that performed for the 1996-2004 period by assuming that from 2004 on into the future, the contractors would have essentially filled within-service-area storage that could have been used from 1996 to 2004. Thus the 2003-2020 analysis uses the 449,000 AF estimate, or an average of about 50,000 AF per year.

Based on this (plus additional analysis from the fisheries section, impact 7.3-5, Future Impacts), the water supply management practices of the proposed project would have contributed to salvage numbers, especially during February and March. The increment of fish protection that would be attributable to the proposed project in relation to total pumping is difficult to estimate. As noted in mitigation from the fisheries section (impact 7.3-5, Future Impacts), the CVP and SWP Delta facilities are being reviewed as part of the OCAP reconsultation process. However, reviewing average annual total projected Banks Pumping Plant pumping and determining the relationship of the proportion of that pumping that might be attributable to the proposed project is important. Banks pumping is estimated to average about 3,200,000 AF per year in the future, based on CALSIM output, and the approximate estimated future added pumping at Banks due to the water supply management practices of the proposed project is about 50,000 AF per year, or 1.6 percent of annual average total Banks pumping. If the same percentage is applied to the current EWA Program asset level of about 300,000-350,000 AF, the proportion of the EWA Program attributable to the water supply management practices of the proposed project would be about 5,500 AF.

In developing mitigation for the fish for the proposed project, several other factors were also examined. The first was to see if the added pumping attributable to the proposed project would occur at times of high fish sensitivity, and the other was to provide for tracking actual future water management actions of the proposed project and preclude the added pumping when it would otherwise occur.

Analysis of the 50,000 AF of added pumping at Banks resulting from the water supply management practices found that about 12,000 AF would generally occur in November and December, when the fish species of concern are seldom near the pumps, with the remaining

38,000 AF of pumping occurring in the January-April period, when fish concerns are greater. Thus the degree of impact of the water supply management practices of the proposed project as a fraction of Banks pumping would be less than the 1.6 percent cited above, or about 1.2 percent.

Based on the analysis, increased future pumping due to the proposed project under 2020 conditions could change Delta flow patterns, disrupt movement of species of fish, and increase entrainment losses of adult delta smelt and salmonid smolts. The actual magnitude of this impact depends on the Delta outflow and the relative reduction generated by increased pumping.

The following list identifies other environmental programs already in place or forthcoming that are relevant to the SWP (thus the proposed project) and Delta fisheries for the 2003-2020 timeframe:

1. Anadromous Fisheries Biological Opinion of 2004;
2. Delta Pumping Plant Fish Protection Agreement (“Four Pumps Agreement”, 1986);
3. Delta Smelt Biological Opinion of 2005;
4. Delta Smelt Action Plan of 2005;
5. Bay-Delta Conservation Plan;
6. Pelagic Fish Action Plan of 2007;
7. Adaptive Management Process;
8. Interagency Ecological Program;
9. Delta Risk Management Study;
10. Delta Vision; and
11. The NOAA Fisheries Biological Opinion of 2004.

The standards of significance established for this proposed project require that a significant impact be identified for any proposed project-related action that will have a substantial adverse effect, either directly or through habitat modifications, on any species protected under the State or federal Endangered Species acts or considered a candidate, or special-status by the USFWS, CDFG, or NOAA Fisheries. For the future impact analysis, compared to baseline conditions, potential exists for the proposed project to have an adverse impact on Delta fish species by increasing salvage at the Skinner facility as a result of higher pumping at Banks during certain periods when San Luis Reservoir would otherwise be full. This is a *potentially significant cumulative impact*.

Mitigation Measure

Implementation of the following mitigation measure would substantially limit the proposed project’s contribution and this would be a ***less-than-significant cumulative impact***.

10.1-2 *Implement Mitigation Measure 7.3-5.*

Mitigation Measure 7.3-5 requires the Department to implement operational assets that could be deployed through a continuation of the EWA, through an equivalent type of program, or through another program that would replace the EWA and provide the fish protection required by the

court and the Biological Opinions on delta smelt and Chinook salmon that would limit any adverse impact resulting from the proposed project on special status Delta fish species as a result of higher pumping at Banks during periods when San Luis Reservoir, absent of the proposed project, would be full.

Terrestrial Biological Resources

The cumulative context for terrestrial resources includes the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Feather River, Sacramento River, San Joaquin River, Sacramento-San Joaquin Delta and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur at Castaic Lake.

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Therefore, the pond and plug and stream bank stabilization and channel form projects, in combination with the Plumas County Watershed Forum watershed improvement projects would result in a beneficial effect for special-status species and therefore, no cumulative impact would occur.

10.1-3 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect special-status terrestrial biological resources in the southern San Joaquin Valley.

The southern San Joaquin Valley portion of Kern and King's County was once comprised of tule marsh, San Joaquin saltbush and California prairie habitats. These supported a variety of endemic species adapted to xeric conditions, including the now federally-listed San Joaquin kit fox (*Vulpes macrotis mutica*), blunt nosed leopard lizard (*Gambelia sila*), and Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*). Though the value of agricultural land is generally lower than that of natural habitat to wildlife, some species have adapted and have extended their range into converted agricultural habitats. Rodents such as voles and ground squirrels, for example, can take advantage of increased food availability and water supply in agricultural lands to increase their populations, which in turn can provide a larger prey base for predators such as raptors. Grain and row crops (and the insects that feed on them) can support bird and mammal populations that would otherwise be constrained by the absence of such food resources in more xeric habitats. Conversely, increased levels of human activity, the plowing and tilling of soils, and the application of fertilizers, pesticides and herbicides to stimulate agricultural production can adversely affect native wildlife resulting in displacement or avoidance.

Water development projects which contribute to the availability and reliability of water supplies could contribute to the existing trend toward replacing annual crops with permanent crops in the southern San Joaquin Valley. The reliability and availability of agricultural water supplies is one factor that could contribute to the amount and types of crops that farmers decide to plant.

The existing trend of replacing irrigated annual crops with permanent crops is expected to continue in the future. While it is possible that additional land could be converted to permanent crops as a result of the increased availability and reliability of water, no clear trend can be discerned. To the extent that some land would be converted to permanent crops, this would not

prohibit San Joaquin kit fox migration, but could adversely impact Swainson's hawk, as this habitat is not suitable for foraging. However, there is only one recorded occurrence of Swainson's hawk within the water district boundaries that total almost 75,000 acres. The Swainson's hawk recorded occurrence was documented within the Tulare Lake Basin WSD. Additionally, the Tulare Lake Basin WD is subject to periodic flooding which makes it unsuitable for anything but annual crops and not permanent crops.

With the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. Even though the creation of new recharge ponds would periodically create open water and wetland habitat for waterfowl, the conversion of land for use as groundwater banking facilities could result in the loss of special-status species habitat.

The KWBA manages lands within the Kern Fan Element property in accordance with an approved HCP/NCCP. Because the Kern Fan Element property is under a HCP/NCCP, the KWBA is required to follow specific guidelines to prevent take of special-status species and to enhance and preserve the natural habitat currently present. Under the conditions of the HCP/NCCP, the KWBA is required to prepare annual reports summarizing activities within the Kern Fan Element property including updates on the water management and related activities; any amendments to the HCP/NCCP; a summary of any take occurrences; land and habitat management and mitigation measures; monitoring programs and studies; mitigation measures and cooperation with wildlife agencies; and the status of conservation credits. The KWBA also set aside a 435-acre mitigation easement.

While no incidental take has occurred since the KWBA's development of the Kern Water Bank (with exception of San Joaquin woolly threads), it is possible that cumulative development could result in take during construction, operation and maintenance, through collapsed burrows, road kills, crushed by grading equipment, harassment, habitat loss, drowning, etc.

Therefore, the proposed project, in combination with other cumulative water development and water reallocation projects, could result in significant impacts to biological resources in the southern San Joaquin Valley due to the construction of additional groundwater storage facilities and the project's contribution to this impact could be considerable. Therefore, this would be a *potentially significant cumulative impact*.

Mitigation Measures

Implementation of Mitigation Measure 7.4-3 is currently implemented by the KWBA as required by the Kern Water Bank HCP/NCCP cumulative impacts to special-status species at the Kern Water Bank would be reduced to a less than significant level.

Implementation of Mitigation Measure 7.4-2 would reduce the project's contribution to this cumulative impact but not to a less-than-significant level. Impacts to terrestrial biological resources in the southern San Joaquin Valley portion of Kern and King's Counties would be reduced through the following mitigation measures; however because the Department has no jurisdiction over local agency decisions and cannot enforce implementation of Mitigation Measure 7.4-2, and the impacts of individual activities are unknown at this time cumulative impacts to terrestrial biological resources would remain a ***potentially significant and unavoidable cumulative impact***.

10.1-3 *Implement Mitigation Measures 7.4-2 and 7.4-3.*

Mitigation Measure 7.4-2 would prevent any adverse impact to special-status species through avoidance of the species and their habitat. If avoidance is not possible, then consultation with the resource agencies would be required to determine appropriate mitigation. However, even though impacts to terrestrial biological resources in the San Joaquin Valley would be reduced, because the impacts of individual activities are unknown at this time, the cumulative impact would remain significant and unavoidable.

Mitigation Measure 7.4-3 would require the use of a biological monitor, special construction activities and on-going practices that would result in a heightened awareness and education regarding sensitive biological resources. In addition, the use of a project representative as a liaison between the project and the resource agencies would expedite notification regarding any take of a listed species. This mitigation measure also outlines avoidance protocol to further reduce the likelihood of take.

10.1-4 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect special-status terrestrial biological resources at San Luis Reservoir, Feather River, Sacramento River, San Joaquin River, and Sacramento-San Joaquin Delta.

San Luis Reservoir

Changes in the amount of water stored at San Luis Reservoir attributed to cumulative projects (including Monterey Plus) would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels. Therefore, cumulative impacts to riparian habitat and special-status species habitat would not be significant.

Feather, Sacramento and San Joaquin Rivers

The effects of the proposed project on flow in the Feather and Sacramento rivers would be immeasurable and would not contribute to cumulative impacts. Therefore, stream flow changes resulting from the proposed project in combination with other cumulative projects are so small that they would not substantially affect any special status terrestrial species or their habitat.

Sacramento-San Joaquin Delta

The cumulative effect of the proposed project and the expected increased pumping by the SWP would be to reduce Delta outflow to San Francisco Bay primarily in wet months of wetter years. Most of the time, water diversion by the SWP and CVP is already at its maximum consistent with environmental regulations and so there would be no cumulative effect. Therefore, flow changes resulting from the proposed project in combination with other cumulative projects are so small that they would not substantially affect any special status terrestrial species or their habitat.

Impact Summary

Changes in SWP reservoir levels could be impacted by cumulative projects, but such changes would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels. Changes in the Sacramento-San Joaquin Delta are so small that they

would not substantially affect any special status terrestrial species or their habitat. Therefore, this would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-5 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect special-status terrestrial biological resources at Lake Perris.

Lake Perris supports a variety of special-status species including the osprey (*Pandion haliaetus*), greater western mastiff bat and Yuma myotis (*Myotis yumanensis*) that use the lake for foraging and water supply. Additionally, two special status species, the double-crested cormorant (*Phalacrocorax auritus*), and the bald eagle, are known to winter at Lake Perris. A reduction in lake levels could reduce overall fish populations, which in turn could adversely affect terrestrial biological resources that use the lake to forage.

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. Draw down of the reservoir to date has reduced the volume by approximately 40 percent. The draw down of Lake Perris is expected to be maintained through 2012.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions. If this worst-case scenario were to occur, the drawdown of the reservoir could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. As part of the Department's ongoing seismic repairs at Lake Perris, the Santa Ana Watershed Association is currently conducting quarterly bird surveys to document how that drawdown affects birds in the area. The results of these surveys may provide insight into the effects on the reduction of food resources as a result of future drawdowns. The reduction in fish populations and that is attributed to maintaining a lower pool volume would be significant but short-term. Regardless, a reduction in food resources could result in reduced nesting success for raptors, bats, and waterfowl, which would result in a ***short-term potentially significant and unavoidable cumulative impact***.

Mitigation Measures

None feasible.

10.1-6 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect riparian habitat and the special-status terrestrial species it supports at Lake Perris.

Lake Perris has an extensive lake-dependent riparian corridor located along its eastern margin that supports special-status species including California thrasher (*Toxostoma redivivum*), Cooper's hawk (*Accipiter cooperii*), Lawrence's goldfinch (*Carduelis lawrencei*), least Bell's vireo (*Vireo bellii pusillus*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), white tailed kite (*Elanus leucurus*), and yellow warbler (*Dendroica petechia brewsteri*).

Additionally, in 2007 the California gnatcatcher (*Poliophtila californica*) was observed using the riparian corridor.

As described under Impact 10.1-5, the seismic retrofit project in combination with borrowing water under Article 54 as allowed under the proposed project, could result in a drawdown of the reservoir that could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Drastic changes in surface elevation during the growing season or a prolonged drawdown could have substantial impacts on riparian vegetation, which supports a variety of wildlife species, providing food, shelter, and nesting habitat.

As part of the Department's ongoing seismic repairs at Lake Perris, a number of mitigation measures have been initiated to reduce impacts to riparian vegetation. An irrigation system that draws water from Lake Perris and feeds the entire stretch of riparian vegetation has been installed. As of May 2007, the riparian vegetation is irrigated twice per week. The success of this system is being monitored monthly by the California Department of Parks and Recreation and may provide insight into the effects of drawdown on the riparian habitat.

Regardless, the project's contribution to a decline in the riparian vegetation would be considerable and this would be a *potentially significant cumulative impact* because this habitat is considered sensitive by DFG, and it supports special-status species.

Mitigation Measures

Implementation of Mitigation Measure 7.4-6 could reduce the project's contribution to the loss of riparian habitat and the associated special-status species to a less-than-significant level, if the changes in water do not impact the riparian habitat, or if any loss of water is supplemented through the sub-surface or surface irrigation. However, because of the complexity of the system, it is unknown at this time what the real impacts on the riparian habitat would be and therefore, the residual impact cannot be assessed. Therefore, this remains a ***potentially significant and unavoidable cumulative impact***.

10.1-6 *Implement Mitigation Measure 7.4-6.*

Mitigation Measure 7.4-6(a) requires the development of baseline studies to determine what water source is maintaining the riparian habitat. In addition, a qualified biologist would conduct a complete habitat assessment of the riparian habitat documenting the size of the habitat, and all wildlife and plant species that use this habitat, including any special-status species.

Mitigation Measure 7.4-6(b) requires that once a baseline is established, annual monitoring would be required to determine changes in hydrologic activities, changes in the health of the riparian habitat, and changes in the use of said habitat by special-status and other wildlife species.

Mitigation Measure 7.4-6(c) requires that an irrigation system be installed to water the riparian habitat or the existing irrigation system shall be maintained and operated (assuming it is successful in maintaining riparian vegetation during the seismic repairs). In addition, monthly monitoring should be conducted to document any changes in the riparian habitat and allow for a timely adjustment of the watering schedule.

Visual Resources

The cumulative context for visual resources includes viewsheds in the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Lake Oroville, and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur.

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Therefore, the pond and plug and stream bank stabilization and channel form projects, in combination with the Plumas County Watershed Forum watershed improvement projects would result in a beneficial effect on visual resources and therefore, no cumulative impact would occur.

10.1-7 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect visual resources in southern San Joaquin Valley, San Luis Reservoir and Lake Oroville.

Southern San Joaquin Valley

Water development projects which contribute to the availability and reliability of water supplies could contribute to the existing trend toward replacing annual crops with permanent crops in the southern San Joaquin Valley. The reliability and availability of agricultural water supplies is one factor that could contribute to the amount and types of crops that farmers decide to plant, which in turn could affect the appearance of the landscape in the southern San Joaquin Valley. Those changes in cropping patterns could alter the appearance of the landscape. Permanent crops are generally taller and provide more visual variety than annual crops. Permanent crops break up the uninterrupted views across miles of flat land, prevalent where annual crops are grown in the southern San Joaquin Valley.

The existing trend of replacing irrigated annual crops with permanent crops is expected to continue in the future. While it is possible that additional land could be converted to permanent crops as a result of the increased availability and reliability of water, no clear trend can be discerned. Therefore any change in agricultural practices would not be expected to result in a dramatic change in visual character. Furthermore, any changes would be seen by a limited number of viewers and probably noticed by even fewer.

The conversion of land for use as groundwater banking facilities (including the expansion of the Semitropic water storage facilities) could also alter the visual appearance of the land; however, it would not result in a substantial change in the visual character because these projects would occur in areas of Kern County that already include groundwater storage facilities.

San Luis Reservoir and Lake Oroville

Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels and changes in the visual character at these two facilities would not be apparent.

Impact Summary

As described above, potential changes in cropping patterns and the conversion of land to groundwater banking facilities would not represent a substantial change in the existing visual character. Because changes in the amount of water stored at San Luis Reservoir and Lake Oroville would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels, changes in the visual character at these two facilities would not be apparent. Therefore, visual resource cumulative impacts would be ***less than cumulatively significant***.

Mitigation Measures

None required.

10.1-8 Implementation of the proposed project in combination with the Lake Perris Seismic Retrofit Project could potentially affect visual resources at Lake Perris.

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. Draw down of the reservoir to date has reduced the volume by approximately 40 percent. When the reservoir volume is reduced there is a band of soil or rock exposed around the perimeter. The perimeter band is initially devoid of vegetation and includes tree stumps and other debris that are not visible when the reservoir is full. The appearance of the perimeter band is often initially in sharp contrast to the reservoir pool and surrounding vegetation making it a prominent visual feature. However, natural succession of vegetation around the reservoir edge results in some shoreline areas with emergent vegetation. Visual quality is temporarily degraded when water levels in the reservoirs are lowered; however, visual quality is generally restored when water levels are raised.

The draw down of Lake Perris and change in the visual character of the reservoir is expected to be maintained through 2012. Vegetation will re-establish once the reservoir is full and operating under normal conditions. This change in visual character that is attributed to maintaining a lower pool volume would be significant but short-term.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions. If this worst-case scenario were to occur, the area exposed around the perimeter of the reservoir could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Mitigation measures, such as hydroseeding or landscaping, to reduce all visual impacts at Lake Perris are economically and physically infeasible because of the scale of the area to be covered. Therefore, although the visual effects of drawdown would be temporary, the project's contribution to this cumulative impact would be considerable and this is considered a ***short-term potentially significant and unavoidable cumulative impact***.

Mitigation Measures

None available.

Agricultural Resources

The cumulative context for agricultural resources is lands in agricultural production in the southern San Joaquin Valley.

10.1-9 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect the area of irrigated cropland and special-status farmland in southern San Joaquin Valley.

Implementation of the proposed project, combined with other cumulative water development and reallocation projects, could result in a reduction of average annual deliveries of SWP water to agricultural contractors. However, there would be little or no impact on the acreage of irrigated land in the southern San Joaquin Valley. If any land was to be taken out of irrigated production it would remain in agricultural use as dry farmed or fallow land and would not be converted to urban uses. Under the proposed project, no Prime, Unique or Farmland of Statewide Importance would be converted to non-agricultural uses nor would a conflict be created with respect to existing agricultural zoning or Williamson Act contracts. Therefore, the project's contribution to cumulative conversion of special-status agricultural lands would not be considerable and this would be a *less-than-significant cumulative impact*.

Mitigation Measures

None required.

Air Quality

The cumulative context for air quality would be the SVAB (southern San Joaquin Valley and San Luis Reservoir), SCAB (Lake Perris and Castaic Lake), NSVAB (Lake Oroville) and the Mountain Counties Air Basin (Plumas County).

Because none of the projects on the cumulative list would change water levels in Castaic Lake there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur for Castaic Lake.

10.1-10 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially increase PM₁₀, NO_x and ROG emissions in southern San Joaquin Valley, San Luis Reservoir, Lake Oroville and Plumas County.

Southern San Joaquin Valley

Water development projects which contribute to the availability and reliability of water supplies could contribute to the existing trend toward replacing annual crops with permanent crops in the southern San Joaquin Valley. The reliability and availability of agricultural water supplies is one factor that could contribute to the amount and types of crops that farmers decide to plant, which in turn could affect associated land disturbance activities. Agricultural activity, especially activity associated with the disturbance of soil, such as discing, can be a source of PM₁₀, which is a criteria pollutant.

It is possible that the existing trend towards conversion to permanent crops could be attributed to an increase in water reliability and availability, and that changes in agricultural practices could reduce the frequency and type of land disturbance in the southern San Joaquin Valley. Soils in the southern San Joaquin Valley are characterized as having slight to very slight potential to experience wind-generated erosion. Consequently, associated PM₁₀ emissions could be limited or reduced.

The conversion of land for use as groundwater banking facilities, however, could result in land disturbance and pump operation which could generate cumulative increases in PM₁₀, NO_x and diesel TAC emissions. With the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. Because the proposed project and other cumulative projects in the SJVAB would be required to implement SJVAPCD PM₁₀ control measures, short-term PM₁₀ construction emissions would not exceed SJVAPCD thresholds on an annual basis. Pumps associated with groundwater banking facilities are electric; however, backup pumps are generally diesel. Diesel engines would emit ozone precursors, including ROG and NO_x; however, these emissions would be infrequent and temporary.

San Luis Reservoir and Lake Oroville

Recreational boats with engines contribute approximately nine percent of the total ROG emissions from off-road sources. The amount of recreational boat use usually increases with increasing water levels in reservoirs that support recreational activities. Conversely, boating decreases when water levels are lower. Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels and therefore, boat emissions would not be expected to significantly change and therefore, would not exceed thresholds. Similarly, cumulative vehicle emissions associated with recreational trips to and from at San Luis Reservoir and Lake Oroville would also not be expected to significantly increase.

Exposed shoreline along reservoirs due to decreased water levels would expose soils to increased rates of wind erosion which would increase particulate matter emissions. As noted above, changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels. Therefore, the amount of shoreline exposed to wind erosion, which would be a source of particulate dust emissions would not be expected to significantly change.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Construction activities could result in ground disturbance (grading or excavation for bank stabilization, ground disturbance for soil enrichment or planting), which could require the use of heavy-duty construction equipment. The heavy equipment would be a source of diesel particulate matter, which is a TAC, as well as emissions of ozone precursors such as ROG and NO_x. The disturbance of the soil associated with the various earthmoving activities could also generate

PM₁₀. The number and size of watershed improvement projects that would result from the proposed project in combination with cumulative watershed improvement projects are relatively small, and the number of pieces of heavy equipment operating at any one time and the amount of acreage disturbed on a daily basis would be commensurately limited. Therefore, emissions would not be substantial. Further, air emissions would be temporary and would occur only as long as the construction activities, so there would be no adverse, permanent effect on air quality in the region.

Impact Summary

The SJVAB is in non-attainment of federal and state standards for both PM₁₀ and ozone. Butte County, located in the NAVSB, is considered “moderate” non-attainment for ozone and PM₁₀. Plumas County, located in the Mountain Counties Air Basin, is in attainment of all the federal standards and is also in attainment of all State standards with the exception of PM₁₀. Therefore, cumulative increases in PM₁₀, NO_x, and ROG emissions in these three air basins could be considered potentially cumulatively significant.

As stated above, it is possible that the existing trend towards conversion to permanent crops could reduce the frequency and type of land disturbance in the southern San Joaquin Valley which could result in limited or reduced PM₁₀ emissions. Furthermore, projects, including the project, in the SJVAB would be required to implement SJVAPCD control measures; therefore, construction emissions would not exceed SJVAPCD thresholds on an annual basis. Backup diesel pump engines would emit ozone precursors, including ROG and NO_x; however, these emissions attributed to the proposed project would be infrequent and temporary.

In addition, the amount of shoreline exposed to wind erosion, boat emissions, and vehicle emissions associated with recreational trips to and from at San Luis Reservoir (located in the SJVAB and the SJAPCD) and Lake Oroville (located in the NSVAB and the BCAPCD) attributed to the proposed project would not be expected to significantly increase.

In Plumas County (located in the Mountain Counties Air Basin and the Northern Sierra Air Quality Management District), the number and size of watershed improvement projects that would result from the proposed project would be relatively small, and the number of pieces of heavy equipment operating at any one time and the amount of acreage disturbed on a daily basis would be commensurately limited. Emissions would be temporary and would not be substantial.

Therefore, the emissions attributed to the proposed project would not be expected to result in a net increase in criteria pollutants over SJVAPCD, BCAPCD and Northern Sierra Air Quality Management District thresholds. The project’s contribution would not be considerable and this would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-11 Implementation of the proposed project in combination with the Lake Perris Seismic Retrofit Project could potentially alter the amount of shoreline exposed to wind erosion, which could generate wind-blown particulate emissions.

Lake Perris is located in the SCAB which is in “extreme” non-attainment of the federal one-hour ozone standard and is considered to be in non-attainment of the federal PM₁₀ standards.

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. Draw down of the reservoir to date has reduced the volume by approximately 40 percent. When the reservoir volume is reduced there is a band of soil exposed around the perimeter. Soils at Lake Perris are characterized as sandy which would be subject to increased rates of wind-induced soil erosion and associated particulate matter emissions.

The draw down of Lake Perris and the exposed soil around the perimeter of the reservoir is expected to be maintained through 2012. The perimeter will be reduced and vegetation will re-establish once the reservoir is full and operating under normal conditions. This increase in exposure of soil to wind erosion attributed to maintaining a lower pool volume would be significant but short-term.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions. If this worst-case scenario were to occur, the area exposed around the perimeter of the reservoir could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Mitigation measures, such as hydroseeding or landscaping, to reduce PM₁₀ emissions at Lake Perris are economically and physically infeasible because of the scale of the area to be covered. Therefore, although the increased rate of soil erosion attributed to the drawdown would be temporary, the project's contribution to this cumulative impact would be considerable and this is considered a ***short-term potentially significant and unavoidable cumulative impact***.

Mitigation Measures

None available.

Geology, Soils and Mineral Resources

The cumulative context for soil erosion would be the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Lake Oroville, and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur at Castaic Lake.

10.1-12 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially increase rates of soil erosion in southern San Joaquin Valley, San Luis Reservoir, Lake Oroville and Plumas County.

Southern San Joaquin Valley

Water development projects which contribute to the availability and reliability of water supplies could contribute to the existing trend toward replacing annual crops with permanent crops in the

southern San Joaquin Valley. The reliability and availability of agricultural water supplies is one factor that could contribute to the amount and types of crops that farmers decide to plant, which in turn could affect associated land disturbance activities. Agricultural activity, especially activity associated with the disturbance of soil, such as discing, can be a source of ground disturbance and associated wind-generated erosion.

It is possible that the existing trend towards conversion to permanent crops could be attributed to an increase in water reliability and availability, and that changes in agricultural practices could reduce the frequency and type of land disturbance in the southern San Joaquin Valley.

With the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. The conversion of land for use as groundwater banking facilities could result in land disturbance which could increase the rate of wind-generated soil erosion.

Soils in the southern San Joaquin Valley are characterized as having slight to very slight potential to experience wind-generated erosion. Consequently, wind-generated erosion associated with changes in agricultural practices and the construction of groundwater banking facilities would be limited.

San Luis Reservoir and Lake Oroville

Exposed shoreline along reservoirs due to decreased water levels would expose soils to increased rates of wind erosion. Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels. Therefore, the amount of shoreline exposed to wind erosion would not be expected to significantly change.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Construction activities could result in ground disturbance (grading or excavation for bank stabilization, ground disturbance for soil enrichment or planting) which would expose soils and increase the rate of wind-generated erosion. Soils in Plumas County are dominated by highly erodible granitic and sedimentary deposits.

Impact Summary

The disturbance of land resulting from changing agricultural practices and the conversion of land for use as groundwater banking facilities could result in land disturbance which could increase the rate of wind-generated soil erosion in the southern San Joaquin Valley. The proposed project, in combination with cumulative water development and reallocation projects would contribute to this effect. However, soils in the southern San Joaquin Valley are characterized as having slight to very slight potential to experience wind-generated erosion. In addition, the amount of soil along the shorelines of San Luis Reservoir and Lake Oroville would not be expected to significantly change over existing conditions.

The number and size of watershed improvement projects would be relatively small and would be expected to stabilize soils along stream courses. Temporary exposure of soil during construction activities would be regulated by State water quality regulations.

Therefore, increases in wind-generated soil erosion attributed to the construction and/or operation of cumulative water development and reallocation projects would be considered a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-13 Implementation of the proposed project in combination with the Lake Perris Seismic Retrofit Project could potentially increase rates of soil erosion.

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. Draw down of the reservoir to date has reduced the volume by approximately 40 percent. When the reservoir volume is reduced there is a band of soil exposed around the perimeter. Soils at Lake Perris are characterized as sandy which would be subject to increased rates of wind-induced soil erosion.

The draw down of Lake Perris and the exposed soil around the perimeter of the reservoir is expected to be maintained through 2012. The perimeter will be reduced and vegetation will re-establish once the reservoir is full and operating under normal conditions. This increase in exposure of soil to wind erosion attributed to maintaining a lower pool volume would be significant but short-term.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions. If this worst-case scenario were to occur, the area exposed around the perimeter of the reservoir could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Mitigation measures, such as hydroseeding or landscaping, to reduce exposure of soil erosion impacts at Lake Perris are economically and physically infeasible because of the scale of the area to be covered. Therefore, although the increased rate of soil erosion attributed to the drawdown would be temporary, the project's contribution to this cumulative impact would be considerable and this is considered a ***short-term potentially significant and unavoidable cumulative impact***.

Mitigation Measures

None available.

Recreation

The cumulative context for recreation resources would be Castaic Lake, Lake Perris, San Luis Reservoir, and Lake Oroville.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur.

10.1-14 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect recreational resources at San Luis Reservoir and Lake Oroville.

The amount of recreational boat use usually increases with increasing water levels in reservoirs that support recreational activities. Conversely, boating decreases when water levels are lower. Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels. Therefore, this would be a *less-than-significant cumulative impact*.

Mitigation Measures

None required.

10.1-15 Implementation of the proposed project in combination with the Lake Perris Seismic Retrofit Project could potentially affect recreational resources at Lake Perris.

Recent drawdowns in Lake Perris for the Seismic Retrofit Project have resulted in a 40-percent reduction in volume. The drawdowns have reduced the water surface elevations to about 1,563 feet. The decrease in water surface elevation has resulted in reduced recreational capacity and availability of facilities. One public boat launch, both personal water craft launches, the ADA fishing dock, and one swim beach have become inoperable. Speed limits around Allesandro Island have been reduced. In addition, waterfowl hunting, permitted at near maximum full pool, is currently not allowed due to safety and animal cover issues. The lower water levels also reduced access to shore fishing potentially reduced fish access to quality habitat for spawning. While having no direct impact on trails, the draw down exposes water features that may be unattractive to nature enthusiasts, hikers, bikers, and horse back riders, potentially diminishing the reservoir's recreational value. The reductions in multiple facilities and activities have contributed to the overall decline in attendance.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions.

A multi-agency MOU signed by the Departments of Water Resources, Parks and Recreation, Boating and Waterways, and Fish and Game along with MWDSC, establish the "Lake Perris Operations Guidelines" which provide for recreational resource protection, benefits to fishery resources and protection of water quality at Lake Perris. Never the less, because the proposed project, in combination with the Seismic Retrofit Project, could result in a worst-case scenario where the reduction in elevation and the associated decrease in the availability of recreational facilities could potentially be equal to or greater than what would have occurred in the absence

of the seismic retrofit project, and the project's contribution would be considerable, this is considered a ***short-term potentially significant cumulative impact***.

Mitigation Measures

Implementing the following mitigation measures would ensure that the project's contribution to impacts to recreation resulting from Article 54 extended drawdowns would be reduced. However, because these mitigation measures would not guarantee the restoration of recreation opportunities, this would remain a ***short-term potentially significant and unavoidable cumulative impact***.

10.1-15 *Implement Mitigation Measure 7.9-1(a) through (d).*

Mitigation Measure 7.9-1 requires the Department to notify the public at the onset of the loss of recreational resources due to Article 54 drawdowns at Lake Perris until the withdrawal is repaid.

In addition, to the extent feasible, the Department would install, extend, or upgrade existing facilities (including lifeguard towers and emergency assistance equipment) to allow safe access to lower lake levels during multi-year drawdowns.

The Department would also be required to monitor water quality during drawdown periods and when swimming is allowed using the current full-body contact criteria and laboratory methods adopted by the California Department of Health Services or the U.S. Environmental Protection Agency, as applicable.

Finally, Mitigation Measure 7.9-1 would require the Department to prepare and provide funding for a management plan to control invasive plant species that could expand into recreational areas during extended drawdown periods.

Land Use and Planning

The cumulative context for land use and planning is the southern San Joaquin Valley.

10.1-16 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially change land use designations in the southern San Joaquin Valley, thereby physically dividing an established community.

Implementation of the proposed project, combined with other cumulative water development and reallocation projects, could result in a reduction of average annual deliveries of SWP water to agricultural contractors. In addition, operation of cumulative water conveyance and storage projects could contribute to increased water transfers related to improved CVP and SWP storage and conveyance capabilities. As a result, there could be temporary or permanent conversions of agricultural land to non-agricultural uses. However, there would be little or no impact on the acreage of irrigated land in the southern San Joaquin Valley. If any land was to be taken out of irrigated production it would remain in agricultural use as dry farmed or fallow land and would not be converted to urban uses.

The trend of replacing irrigated annual crops with permanent crops is expected to continue in the future with or without the proposed project. While it is possible that additional land could be converted to permanent crops as a result of the proposed project, no clear trend can be

attributable to the proposed project that can be discerned for the historical analysis period. Because agricultural use would continue, there would be no change in land use. If the land use planning authority were to change existing land use designations and zoning, the appropriate environmental review would be under taken to approve such a change at that time.

In addition, with the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. While construction of these facilities could alter land use patterns, land use designations would not change and these uses would be compatible with existing land uses. No commercial, retail, office, residential or other uses that would support population have been designated, and an established community has not been divided. Therefore, this would be considered a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Hazards and Hazardous Materials

The cumulative context for hazards and hazardous materials would be the southern San Joaquin Valley and Plumas County.

10.1-17 Construction of the proposed project in combination with construction of cumulative water development and reallocation projects could potentially expose workers or the public to previously unidentified hazards or hazardous materials in Southern San Joaquin Valley and Plumas County.

Southern San Joaquin Valley

The proposed project in combination with other water development and reallocation projects would result in construction activities at locations in the southern San Joaquin Valley portion of Kern County. Approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. Ground disturbing activities associated with cumulative projects could expose construction workers to residual chemicals associated with past and present agricultural practices. Construction activities would also involve the use of heavy equipment that could contain fuels and lubricants which contain hazardous compounds.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Construction activities could result in ground disturbance (grading or excavation for bank stabilization, ground disturbance for soil enrichment or planting), which could expose previously unidentified soil and/or groundwater contamination. In addition, heavy-duty used during construction could contain fuels and lubricants which contain hazardous compounds.

Impact Summary

This cumulative risk of exposure would be temporary in nature and regulated by federal and state laws that govern the storage, application and disposal of these chemicals to minimize risk of exposure. Therefore, this is considered a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Noise

The cumulative context for increases in noise levels would be the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Lake Oroville, and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur at Castaic Lake.

10.1-18 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially increase noise levels in southern San Joaquin Valley, San Luis Reservoir, Lake Oroville, Lake Perris and Plumas County.

Southern San Joaquin Valley

Implementation of the proposed project, in combination with other water development and reallocation projects could alter agricultural practices in southern San Joaquin County. Changes in agricultural practices could alter traffic volumes and use of agricultural equipment. An increase in vehicle trips and use of agricultural equipment could contribute to a significant increase in noise levels. However, the numbers of vehicle trips to fields and use of agricultural equipment at fields with permanent crops would likely be the same or less than trips to fields with annual crops.

With the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. The cumulative construction of groundwater banking facilities could also require construction of new or altered access roads. Construction activities would include the use of heavy equipment which would generate short-term increases in ambient noise levels. Operation of groundwater banking facilities would also require use of pumps. Increased noise levels associated with the construction and operation of new banking facilities would be temporary and would impact uses in the immediate vicinity.

San Luis Reservoir and Lake Oroville

The amount of recreational boat use usually increases with increasing water levels in reservoirs that support recreational activities. Increased boat use would increase noise levels. Conversely, boating decreases when water levels are lower. Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water

surface elevations compared to normal operating levels and therefore, noise levels associated with increased boat use would not be expected to significantly change. Similarly, cumulative vehicle noise levels associated with recreational trips to and from at San Luis Reservoir and Lake Oroville would also not be expected to significantly change.

Lake Perris

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. The reductions in reservoir volumes has limited access to multiple facilities and reduced boating activities.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions.

A multi-agency MOU signed by the Departments of Water Resources, Parks and Recreation, Boating and Waterways, and Fish and Game along with MWDSC, establish the "Lake Perris Operations Guidelines" which provide for recreational resource protection, benefits to fishery resources and protection of water quality at Lake Perris. Nevertheless, the proposed project, in combination with the Seismic Retrofit Project, could result in a worst-case scenario where the reduction in elevation and the associated decrease in the availability of recreational facilities could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Therefore, it is anticipated that there could be a short-term reduction in noise levels associated with boating activities and vehicle trips to and from the reservoir under cumulative conditions.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Construction activities could result in ground disturbance (grading or excavation for bank stabilization, ground disturbance for soil enrichment or planting) and the use of heavy-duty equipment. The number and size of watershed improvement projects would be relatively small and the construction activities temporary. In addition, the improvements are likely to occur in locations where little or no sensitive receptors are present.

Impact Summary

An increase in vehicle trips and use of agricultural equipment could contribute to a significant increase in noise levels. The proposed project would have little or no impact on the acreage of irrigated land in southern San Joaquin Valley. Further, while implementation of the proposed project in combination with other cumulative projects could contribute towards the conversion of annual crops to permanent crops this is an existing trend and the land would remain in agricultural production. Increased noise levels associated with the construction and operation of new banking facilities would be temporary and would impact uses in the immediate vicinity. If sensitive receptors are located close to these facilities this could be a significant cumulative impact. New banking facilities attributed to the proposed project would likely not expose

sensitive receptors to increased noise levels because the facilities would be sited in relatively remote areas. Furthermore, increases in construction and operational noise levels would be temporary and intermittent. Therefore, the project's contribution would not be considerable.

Cumulative noise levels, including those contributed by the proposed project, associated with boat use and vehicle trips to and from at San Luis Reservoir and Lake Oroville would not be expected to significantly change and they could be reduced at Lake Perris. Therefore, this would be a less than significant cumulative impact.

The number and size of watershed improvement projects to be constructed in Plumas County would be relatively small and the construction activities temporary. In addition, the improvements are likely to occur in locations where little or no sensitive receptors are present. Therefore, this would be a less than significant cumulative impact.

While cumulative noise levels attributed to the construction and/or operation of cumulative water development and reallocation projects could increase, the proposed project's contribution to cumulative noise levels would not be considerable and this would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Cultural and Paleontological Resources

The cumulative context for cultural and paleontological resources would be the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Lake Oroville, and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur at Castaic Lake.

10.1-19 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially damage or destroy cultural and paleontological resources in the southern San Joaquin Valley.

Water development projects which contribute to the availability and reliability of water supplies could contribute to the existing trend toward replacing annual crops with permanent crops in the southern San Joaquin Valley. The reliability and availability of agricultural water supplies is one factor that could contribute to the amount and types of crops that farmers decide to plant, which in turn could affect associated land disturbance activities. Agricultural activity, especially activity associated with the disturbance of soil, such as discing, can be a source of ground disturbance. It is possible that the existing trend towards conversion to permanent crops could be attributed to an increase in water reliability and availability, and that changes in agricultural practices could reduce the frequency and type of land disturbance in the southern San Joaquin Valley.

Ground disturbance associated with agricultural activity has the potential to damage or destroy prehistoric or archeological artifacts or paleontological deposits. Since much of the area has been actively farmed, it is likely that many artifacts and deposits have already been disturbed or destroyed. However, the continued trend from annual crops to permanent crops would likely

reduce ground disturbance which would reduce the potential for impacts to cultural and paleontological resources.

With the proposed project, approximately 1,200 acres of ponds would be developed in the Kern Fan Element and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. The cumulative construction of groundwater banking facilities could also require construction of new or altered access roads. Prehistoric sites have been identified in both the Semitropic and Arvin-Edison project areas and on the Kern Fan Element property. Increased construction of banking facilities could increase the risk of damage or destruction of known or previously unidentified cultural resources.

The Kern Delta WD identified the potential for cultural resources to be adversely affected as a result of implementation of the Kern Delta WD Water Banking and In-Lieu Water Supply Project. The EIR for this project included mitigation measures which required development and implementation of a Cultural Resources Treatment Plan to ensure that if previously unidentified archaeological resources were discovered, that work would cease and a qualified archaeologist would examine the discovery and make appropriate recommendations for data recovery.

Increased construction of banking facilities could increase the risk of damage or destruction of known or previously unidentified cultural resources. Therefore, this is considered a potentially significant cumulative impact. The project's contribution would be considerable because it would include construction of groundwater banking facilities in Kern County, including on the Kern Fan Element property which could contribute to the exposure of cultural resources to damage or destruction. Therefore, the potential for damage or destruction of cultural and paleontological resources is considered a *potentially significant cumulative impact*.

Mitigation Measures

Implementation of the following mitigation measure would substantially limit the project's contribution and this cumulative impact but it would remain significant and unavoidable because the Department can not guarantee the implementation or monitoring of Mitigation Measure 7.13-2. Therefore, the potential to damage or destroy cultural resources in southern San Joaquin Valley would remain a ***potentially significant and unavoidable cumulative impact***.

10.1-19 *Implement Mitigation Measures 7.13-2(a) through (c) and 7.13-3(a) through (d).*

Implementation of Mitigation Measure 7.13-2(a) would reduce potentially significant impacts on archaeological resources to a less-than-significant level by requiring identification of known or suspected archaeological resources and requiring the analysis, protection, or scientific recovery and evaluation of any archaeological resources that could be encountered, which would ensure that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

Implementation of Mitigation Measure 7.13-2(b) would reduce potentially significant impacts on paleontological resources to a less-than-significant level by requiring identification of known or suspected resources and requiring the analysis, protection, or scientific recovery and evaluation of any paleontological resources that could be encountered, which would ensure that important scientific information that could be provided by these resources regarding the past is not lost.

Implementation of Mitigation Measure 7.13-2(c) would reduce this potentially significant impact to a less-than-significant level by ensuring appropriate examination, treatment, and protection of human remains, consistent with the applicable provisions of State law.

Mitigation Measures 7.13-3(a) through (d) were outlined in the Initial Study and Addendum to the Monterey Amendment EIR of the KWBA, Kern Water Bank HCP/NCCP. Under the Settlement Agreement, the parties recognize that the Addendum has been completed and agree not to challenge the mitigation measures (Settlement Agreement, III.F). The measures require that prior to any ground disturbing work on the Kern Water Bank that qualified professionals conduct a pedestrian survey and that any cultural resources identified during a survey be recorded, evaluated and mitigated pursuant to Section 106 of the National Historic Preservation Act. The measures also include a requirement to evaluate, consistent with Section 106 the eight recorded archeological sites on the Kern Water Bank and that if any human remains are found that work would be halted and the Kern County Coroner notified.

10.1-20 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially damage or destroy cultural and paleontological resources in San Luis Reservoir, Lake Oroville, Lake Perris and Plumas County.

San Luis Reservoir and Lake Oroville

Exposed shoreline along reservoirs due to decreased water levels would expose known or unknown cultural resources. However, changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels.

Lake Perris

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. Draw down of the reservoir to date has reduced the volume by approximately 40 percent. When the reservoir volume is reduced there is a band of soil exposed around the perimeter which could increase the potential for known and/or unknown cultural or paleontological resources to be subject to damage. One recorded site could be exposed under drawdown conditions.

The draw down of Lake Perris and the exposed soil around the perimeter of the reservoir is expected to be maintained through 2012. The perimeter will be reduced once the reservoir is full and operating under normal conditions. Therefore, the potential increase in exposure of cultural or paleontological resources to damage due to maintaining a lower pool volume would be significant but short-term.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of use, other operational factors and future hydrologic conditions. If this worst-case scenario were to occur, the area exposed around the perimeter of the reservoir could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. Construction activities could result in ground disturbance activities (grading or excavation for bank stabilization, ground disturbance for soil enrichment or planting).

Portions of Plumas County were occupied in prehistoric and historic times by several Native American groups, and many of these areas have not been surveyed for cultural resources. Much of the proposed restoration and stabilization work would occur in or near stream channels, which tended to be common areas for Native American settlement. Evidence of these activities, as well as the historically or culturally significant sites themselves, is likely to be present. Consequently, to the extent that construction activities could result in ground disturbance, archaeological resources, including human burials, which could be present in these areas, could be damaged or destroyed.

Portions of Plumas County, particularly near Lake Oroville and the Feather River, are underlain by the Monte de Oro rock formation, which contains a variety of fossils. Tertiary plant and vertebrate fossils have been observed in bluffs along rivers and streams and may also be present along the Feather River. Proposed restoration and stabilization work would occur in or near stream channels, which are locations in which fossils have been observed and ground disturbance could damage or destroy paleontological resources.

Impact Summary

The potential for damage or destruction of cultural resources attributed to changes in reservoir levels in San Luis Reservoir and Lake Oroville would be cumulatively less than significant because water surface elevations are not anticipated to significantly change and the chance of uncovering resources currently below the normal operating water surface elevations is minimal.

Drawdown of Lake Perris and the construction of watershed projects in Plumas County could increase the risk of damage or destruction of known or previously unidentified cultural resources. Therefore, this is considered a potentially significant cumulative impact. The project's contribution would be considerable because it could include extended drawdown of Lake Perris under Article 54 and construction of watershed improvement projects in Plumas County, all of which could contribute to the exposure of cultural resources to damage or destruction. Therefore, the potential for damage or destruction of cultural and paleontological resources is considered a ***potentially significant cumulative impact***.

Mitigation Measures

Implementation of the following mitigation measure would substantially limit the project's contribution and this would be a ***less-than-significant cumulative impact***.

10.1-20 *Implement Mitigation Measures 7.13-2(a) through (c) and 7.13-3(a) through (d).*

Implementation of Mitigation Measure 7.13-2(a) would reduce potentially significant impacts on archaeological resources to a less-than-significant level by requiring identification of known or suspected archaeological resources and requiring the analysis, protection, or scientific recovery and evaluation of any archaeological resources that could be encountered, which would ensure

that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

Implementation of Mitigation Measure 7.13-2(b) would reduce potentially significant impacts on paleontological resources to a less-than-significant level by requiring identification of known or suspected resources and requiring the analysis, protection, or scientific recovery and evaluation of any paleontological resources that could be encountered, which would ensure that important scientific information that could be provided by these resources regarding the past is not lost.

Implementation of Mitigation Measure 7.13-2(c) would reduce this potentially significant impact to a less-than-significant level by ensuring appropriate examination, treatment, and protection of human remains, consistent with the applicable provisions of State law.

Mitigation Measures 7.13-3(a) through (d) were outlined in the Initial Study and Addendum to the Monterey Amendment EIR of the KWBA, Kern Water Bank HCP/NCCP. Under the Settlement Agreement, the parties recognize that the Addendum has been completed and agree not to challenge the mitigation measures (Settlement Agreement, III.F). The measures require that prior to any ground disturbing work on the Kern Water Bank that qualified professionals conduct a pedestrian survey and that any cultural resources identified during a survey be recorded, evaluated and mitigated pursuant to Section 106 of the National Historic Preservation Act. The measures also include a requirement to evaluate, consistent with Section 106 the eight recorded archeological sites on the Kern Water Bank and that if any human remains are found that work would be halted and the Kern County Coroner notified.

Public Services and Utilities

None of the proposed project elements would directly result in changes in population that would generate a need for new or expanded government facilities or an increase in demand for public services and utilities. Because there would be no impact, there would be no combined effect with other cumulative projects. Therefore, **no cumulative impact** would occur. Impacts associated with the potential for the proposed project to cumulative growth are discussed in Chapter 8 Growth Inducement.

Traffic and Transportation

The cumulative context for increases in noise levels would be the southern San Joaquin Valley, Castaic Lake, Lake Perris, San Luis Reservoir, Lake Oroville, and Plumas County.

Because none of the projects on the cumulative list would change water levels in Castaic Lake, there would be no combined effect with the proposed project. Therefore, no cumulative impact would occur.

10.1-21 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially affect traffic and circulation in southern San Joaquin Valley, San Luis Reservoir, Lake Oroville, Lake Perris and Plumas County.

Southern San Joaquin Valley

Implementation of the proposed project, in combination with other water development and reallocation projects could alter agricultural practices in southern San Joaquin County.

Changes in agricultural practices could alter traffic volumes. The numbers of vehicle trips to fields at fields with permanent crops would likely be the same or less than trips to fields with annual crops. An increase in vehicle trips could contribute to decreased levels of service on local roads.

With the proposed project, approximately 1,200 acres of ponds would be developed on the Kern Fan Element property and approximately 500 acres of ponds as part of other groundwater storage facilities in Kern County. In addition, the Semitropic Water Storage District is proposing to construct the Stored Water Recovery Unit. The cumulative construction of groundwater banking facilities could increase the number of vehicle trips during construction and to perform routine maintenance. The increases in vehicle trips would have little effect on traffic flow on affected local roads.

San Luis Reservoir and Lake Oroville

The amount of recreational boat use usually increases with increasing water levels in reservoirs that support recreational activities. Conversely, boating decreases when water levels are lower. Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels and therefore, vehicle trips on local and regional roads would not be expected to significantly change.

Lake Perris

The seismic retrofit project at Lake Perris would reduce the total volume of the reservoir. The reductions in reservoir volumes has limited access to multiple facilities and reduced recreational activities and associated vehicle trips to and from the reservoir.

Article 54 of the Monterey Amendment allows SWP contractors to borrow water from Lake Perris under certain conditions. Such borrowing could further reduce reservoir water levels if implemented concurrent with the seismic retrofit project draw down. The effects of borrowing of water on water surface elevations would depend on the extent to which MWDSC makes use of Article 54, Department approval, the season of us, other operational factors and future hydrologic conditions.

A multi-agency MOU signed by the Departments of Water Resources, Parks and Recreation, Boating and Waterways, and Fish and Game along with MWDSC, establish the "Lake Perris Operations Guidelines" which provide for recreational resource protection, benefits to fishery resources and protection of water quality at Lake Perris. Never the less, the proposed project, in combination with the Seismic Retrofit Project, could result in a worst-case scenario where the reduction in elevation and the associated decrease in the availability of recreational facilities could potentially be equal to or greater than what would have occurred in the absence of the seismic retrofit project. Therefore, it is anticipated that there could be a short-term reduction in vehicle trips to and from the reservoir under cumulative conditions.

Plumas County

Watershed improvement projects take many forms but most involve actions to prevent erosion and restore wildlife habitat along streams and rivers. In general, projects of this type improve the appearance of stream banks by returning them to a more natural condition. The number

and size of watershed improvement projects would be relatively small and the construction activities temporary; therefore, the associated increase of vehicle trips on local roads would also be anticipated to be limited and temporary.

Impact Summary

An increase in vehicle trips could contribute to decreased levels of service on local roads. However, the numbers of vehicle trips to fields at fields with permanent crops would likely be the same or less than trips to fields with annual crops. Implementation of the proposed project in combination with other cumulative projects could contribute towards the conversion of annual crops to permanent crops; however, this is an existing trend and the land would remain in agricultural production. Therefore, it is unlikely that there would be any increase in vehicle trips, and if there was it would have little effect on traffic flow on affected local roads.

Changes in the amount of water stored at San Luis Reservoir and Lake Oroville attributed to the proposed project in combination with other cumulative projects would not be anticipated to have a significant effect on water surface elevations compared to normal operating levels and therefore, vehicle trips on local and regional roads would not be expected to significantly change. Furthermore, there would be an anticipated short-term reduction in vehicle trips to and from Lake Perris under cumulative conditions.

Finally, vehicle trips associated with the construction and maintenance of watershed improvement projects in Plumas County would be temporary and limited.

Therefore, increased vehicle trips attributed to the construction and/or operation of cumulative water development and reallocation projects would result in a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Energy

The cumulative context for energy would be SWP hydroelectric facilities (including, but not limited to Thermalito Diversion Dam, Hyatt-thermalito, Gianelli, Alamo, Warne, Mojave Siphon, and Devil Den) and other energy providers in California, the Northwest and the Southwest which the Department has agreements to sell, buy or exchange energy.

10.1-22 Implementation of the proposed project in combination with cumulative water development and reallocation projects could potentially increase energy demand.

Implementation of the proposed project in combination with other cumulative water development and reallocation projects would increase energy use associated with increased pumping and water distribution. Increased energy use would increase the demand at existing SWP hydroelectric facilities and other facilities that provide energy for the SWP. An increase in energy demand could result in the need to expand or construct new energy production and distribution facilities. This would be considered a significant cumulative impact.

The power analysis for proposed project energy consumption projected that there would be a minimal increase (2.02 percent) in the long term net power requirements of the SWP (see Table 7.16-2 in Section 7.16).

In the future, some of the SWP hydroelectric power plants would generate less energy (Alamo, Mojave, and Devil Canyon), some would produce the same amount of energy (Gianelli, Oroville and Thermalito), and some would produce more energy (Warne and Castaic) (see Table 7.16-3 in Section 7.16). An overall increase of 128 GWh in energy loads at the pumping plants is also projected; about 75 percent of this increase occurs at South Bay and Edmonston Pumping Plants. Four other pumping plants show a decrease in energy loads: Banks, Dos Amigos, Las Perillas, and Badger Hill (see Table 7.16-3).

SWP pumping facilities are designed to meet the anticipated demands to deliver SWP water to the SWP Contractors, and this rated capacity would not be exceeded by implementation of the proposed project. The amount of additional power required would be within the limits of the planned power supply, and no expansion or construction of new facilities to generate power would be required. No new long-term or short-term contracts would be necessary under future conditions. Additionally, with a total long-term net load increase of 2.02 percent, the project's contribution to increased energy demand would not be considerable and therefore, this would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Growth-Inducement

As described in Chapter 8, Growth-Inducing Impacts, in order to comply with CEQA, an EIR must discuss the ways in which the proposed project could affect economic or population growth in the vicinity of the project and how the characteristics of the project could result in other activities with adverse impacts to the environment. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. This discussion summarizes potential cumulative growth-inducing impacts attributed to water development projects, including the proposed project, and the project's contribution to this cumulative growth.

The proposed project in combination with other water development projects could support population growth in California. As identified in Chapter 8, by 2020, the additional water supply that would be made available by the Monterey Amendment through average annual Table A deliveries to eight M&I contractors could support a maximum increase in population of approximately 392,808 to 561,684 (depending on the future scenario) in their service areas. Average annual Table A and Article 21 deliveries to seven M&I contractors could support a maximum increase in population of approximately 405,104 to 561,685. California's population in 2000 was estimated to be 34,088,135 and is estimated to be 48,110,700 by 2030.¹ This represents an increase in population of 14,022,565 by 2030. The project's contribution to state-wide population growth would represent a maximum of .04 percent of the estimate increase in population. It is reasonable to assume that the actual population growth in 2020 in the state and supported by the project would be less than that estimated for 2030. The effects of this cumulative increase in population are discussed below.

Environmental Impacts

Because there could be a cumulative increase in population in the State and the project would contribute to this increase, existing undeveloped land could be converted to urban uses or current urbanization could be intensified, which could have secondary (or indirect) environmental effects such as impacts on special-status species and their habitat, changes in storm water quality and quantity due to increased impervious surface cover, reduction in air quality, increased traffic and noise levels, reduction in public service and utility levels of service, etc.

The specific environmental effects associated with increased population are too speculative to predict or evaluate since the exact location and manner of potential future development cannot be determined. However, this Program EIR provides an independent but generalized analysis of secondary impacts based on the known environmental effects of urban development in California. This analysis is presented below. The cumulative environmental impacts of implementing the proposed project are evaluated in this chapter of the EIR.

The conversion of land to urban uses could result in a variety of different environmental impacts. Land that would be converted to urban uses along transportation routes and on the fringes of existing urban and suburban areas is typically undeveloped or used for agriculture. Conversion to urban uses of agricultural lands removes this land permanently from being available for agricultural production. In addition, conversion of agricultural or undeveloped lands eliminates most of the wildlife habitat value of these lands. Landform and drainage patterns could be altered, with natural drainage channels largely replaced by engineered storm water systems. Impermeable roofs, parking lots, and roadways could replace permeable surfaces with a consequent increase in storm water runoff and a decrease in groundwater recharge. Various substances associated with homes, yards, and vehicle use (paints, pesticides, plasticizers, oil and grease, brake dust, pet wastes, etc) could be deposited on urban surfaces and conveyed to natural waterways. The introduction of people and vehicles into previously unpopulated or lightly populated areas could increase traffic, noise levels, air pollutant emissions, the generation of sanitary wastewater and solid waste, and the demand for local services.

Conclusions

The additional water supply that would be made available by cumulative water development projects, including the proposed project, would support projected state-wide population growth. It is unlikely that all of the population growth potentially supported by future water development would occur because some of the water would be used for other purposes such as improving the reliability of water supplies, or that any growth that did occur could be attributed solely to water supply development.

Increases in population can result in new development that causes adverse impacts to the environment. This discussion concludes that some of the impacts are potentially significant and cannot be avoided. Neither the Department nor other water supply agencies make local decisions regarding growth and where it will occur. Cities and counties in the contractor service areas affected by the increased population are responsible for considering the environmental effects of their growth and land use planning decisions. When new developments are proposed, the cities and counties prepare environmental documents pursuant to CEQA. Where appropriate, they must consider mitigation measures, alternatives and overriding considerations.

ENDNOTES

1. California Department of Water Resources, California Water Plan Update 2005, Volume 3, Figure 1-1, page 1.ii.