

**DELTA-MENDOTA CANAL UNIT**

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**ENVIRONMENTAL ASSESSMENT  
LONG-TERM CONTRACT RENEWAL**

**Chapter 1  
Purpose and Need**

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February 2005

# **CHAPTER 1**

## **PURPOSE AND NEED**

### **INTRODUCTION**

#### **BACKGROUND**

The Central Valley Project (CVP) is the largest water storage and delivery system in California, with a geographic scope covering 35 of the state's 58 counties. The CVP is divided into nine divisions. This Environmental Assessment (EA) deals with the Delta-Mendota Canal Unit, one unit of the Delta Division. The U.S. Bureau of Reclamation (Reclamation) and the Delta-Mendota Canal Unit (DMC Unit) Contractors propose to renew the long-term water service contracts to deliver water from the CVP for agricultural and municipal and industrial (M&I) uses. The renewal of these contracts would allow continued CVP water delivery to the contractors within the DMC Unit. This EA, prepared by Reclamation, evaluates the impacts of long-term water service contract renewals.

#### **STATUTORY AUTHORITIES**

Renewal of these contracts is being undertaken in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), as amended and supplemented, including, but not limited to the Acts of August 26, 1937 (50 Stat. 844) as amended and supplemented; August 4, 1939 (53 Stat. 1187) as amended and supplemented; July 2, 1956 (70 Stat. 483); June 3, 1960 (74 Stat. 156); June 21, 1963 (77 Stat. 68); October 12, 1982 (96 Stat. 1262); and October 27, 1986 (100 Stat. 3050); and Title XXXIV of the CVPIA of October 30, 1992 (106 Stat. 4706).

#### **NUMBER AND BREADTH OF CONTRACTS**

Reclamation proposes to renew 114 CVP water service contracts throughout the Central Valley. These contracts include an annual maximum quantity of approximately 5.6 million acre-feet of CVP water and provide water service to approximately 3.2 million irrigable acres of land and an urban population in excess of 4.3 million.

### **PURPOSE AND NEED FOR THE ACTION**

On October 30, 1992, the President signed into law the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law [PL] 102-575), which included Title XXXIV, the Central Valley Project Improvement Act (CVPIA). The CVPIA amended the previous

authorizations of the CVP to achieve a reasonable balance among competing demands for use of CVP water, including the requirements of fish and wildlife and agricultural, M&I, and power contractors. Through the CVPIA, Reclamation is developing policies and programs to improve the environmental conditions that were affected by the operation and maintenance and physical facilities of the CVP. The CVPIA also includes tools to facilitate larger efforts in California to improve environmental conditions in the Central Valley and the San Francisco Bay-Delta system (Bay-Delta). Section 3404(c) of the CVPIA directs the Secretary of the Interior (Secretary) to renew existing CVP water service and repayment contracts following completion of a Programmatic Environmental Impact Statement (PEIS) and other needed environmental documentation by stating that:

*... the Secretary shall, upon request, renew any existing long-term repayment or water service contract for the delivery of water ... for a period of 25 years and may renew such contracts for successive periods of up to 25 years each ... [after] appropriate environmental review, including preparation of the environmental impact statement required in section 3409 [i.e., the CVPIA PEIS] ... has been completed.*

Section 3404(c) of the CVPIA states that 25 years will be the upper limit for long-term irrigation repayment and water service contracts within the CVP. However, Section 3404(c) did not amend the provisions of Section 9(c) of the Reclamation Project Act of 1939 and the Reclamation Project Act of June 21, 1963, which authorized renewal of M&I water contract terms for up to 40 years. These authorizations remain in place as guidance for establishing the terms of M&I contracts. Therefore, under the federal action, the term for agricultural (irrigation) water service contracts will be 25 years, the term for mixed agricultural/M&I water service contracts will be 25 years, and the term for M&I-only long-term water service contracts will be 40 years.

Section 3409 of the CVPIA required the Secretary to prepare a PEIS to evaluate the direct and indirect adverse impacts and benefits of implementing the CVPIA. The PEIS was prepared under the National Environmental Policy Act (NEPA) by Reclamation and U.S. Fish and Wildlife Service (Service).

Reclamation released a Draft PEIS on November 7, 1997 (Reclamation 1997a). The Service became a co-lead agency in August 1999. An extended comment period closed on April 17, 1998. Reclamation and the Service released the Final PEIS in October 1999 (Reclamation and Service 1999) and the Record of Decision in January 2001.

The purpose of the federal action is to renew the DMC Unit long-term water service contracts, consistent with Reclamation authority and all applicable state and federal laws, including the CVPIA. The project alternatives include the terms and conditions of the long-term contracts and tiered water pricing. Long-term water service contract renewal is needed to:

- Continue the beneficial use of water, developed and managed as part of the CVP, with a reasonable balance among competing demands, including the needs of irrigation and domestic uses; fish and wildlife protection, restoration, and mitigation; fish and wildlife enhancement; power generation; recreation; and other water uses consistent with requirements imposed by the State Water Resources Control Board (State Board) and the CVPIA.
- Incorporate certain administrative conditions into the renewed contracts to ensure continued CVP compliance with current federal Reclamation law and other applicable statutes.
- Allow the continued reimbursement to the federal government for costs related to CVP construction and operation.

## **BASIS OF CVP WATER SERVICE CONTRACT RENEWALS**

Reclamation is responsible for operational control of the CVP, including securing payment for the cost of water and for operation and maintenance established in the water service contract with the federal government. In addition, as the Secretary's duly authorized representative, Reclamation administers all actions pertaining to the establishment of water service contracts on the Secretary's behalf. In 1998 (prior to the development of Alternative 2), Reclamation officially transferred operation and maintenance responsibility for the majority of the south-of-Delta project facilities to the San Luis and Delta-Mendota Water Authority.

The Reclamation Project Act of 1939 provided for the repayment of construction charges and authorized the sale of CVP water to municipalities and other public corporations and agencies, plant investment, and certain irrigation water deliveries to leased lands.

The Reclamation Project Act of 1956 provided that the Secretary include the provision for contract renewal, upon request of the other party, of any long-term contract for municipal, domestic, or industrial water supply. The contract renewal would be subject to the renegotiation of (1) the charges set forth in the contract in light of circumstances prevailing at the time of renewal and (2) any other matters with respect to which the right to

renegotiate is reserved in the contract. This act also states that the Secretary shall, upon request, provide in any such long-term contract that during the term of the contract and of any renewal (subject to fulfillment of other obligations), the other party to the contract shall have a first right to a stated share or quantity of the CVP water supply that is available for municipal, domestic, industrial, or irrigation use.

The Reclamation Project Act of 1956 provided the right of renewal of long-term repayment or water service contracts for agricultural contractors for a term not to exceed 40 years. The Reclamation Project Act of 1963 provided the right of renewal of long-term repayment or water service contracts for M&I contractors.

### **BASIS OF DELTA-MENDOTA CANAL UNIT WATER SERVICE CONTRACT RENEWALS**

The Central Valley Project Authorization Act of 1937 authorized the construction of CVP project features for navigation, flood control, and water storage; construction of distribution systems; and hydropower generation. The Rivers and Harbors Act of 1940 further authorized the construction of CVP facilities and mandated that dams and reservoirs be used first for river regulation, improvement of navigation, and flood control; second for irrigation and domestic uses; and third for power. This authorization was reauthorized and supplemented by the American River Division Authorization Act of 1949, the Trinity River Act of 1955, the San Luis Authorizing Act of 1960, the Rivers and Harbors Act of 1962, the Auburn-Folsom South Unit Authorization Act of 1967, and the San Felipe Division Authorization Act of 1967 (Reclamation and Service 1999). The CVP facilities include reservoirs on the Trinity, Sacramento, American, Stanislaus, and San Joaquin Rivers and conveyance facilities throughout northern and central California.

The DMC Unit is part of the Delta Division of the CVP. The Delta Division provides for the transport of water through the central portion of the Central Valley, including the Delta. It acts as a hub around which the CVP revolves. The Delta Division is complex in its operations, and all features do not operate in conjunction with one another. The Delta Division facilities provide for the conveyance of water through both the Bay-Delta and the Sacramento-San Joaquin River Delta (Delta) and provide for the delivery of water to CVP contractors in both eastern Contra Costa County and the San Joaquin Valley. The Contra Costa Canal transports water to Contra Costa County. The Delta Cross Channel moves water from the Sacramento River through an excavated channel and natural channels to the Tracy Pumping Plant, which then pumps water into the Delta-Mendota Canal. The Delta-Mendota Canal then delivers water to the west side of the San Joaquin Valley, ending at the Mendota Pool, 30 miles west of the City of Fresno.

Not including the Exchange Contractors,<sup>1</sup> 24 contractors currently receive water from the Delta-Mendota Canal. These 24 contractors include four contractors (Pacheco Water District, Panoche Water District, San Luis Water District, and Westlands Water District) with long-term water service contracts that are also served from facilities that are part of the San Luis Unit.<sup>2</sup> The total Delta-Mendota Canal deliveries to these four contractors may vary, depending upon scheduling between facilities. Over the past five years, only Panoche Water District and San Luis Water District have received deliveries from the Delta-Mendota Canal; these deliveries have averaged approximately 17,653 acre-feet over the past five years (Reclamation 2004). Total deliveries from the Delta-Mendota Canal have averaged 415,414 acre-feet over the past five years. The remaining 20 contractors receiving water from the Delta-Mendota Canal are considered in this EA. Water deliveries are made pursuant to the long-term water service contracts or to the interim renewals of such contracts entered into pursuant to CVPIA Section 3404(c)(1). These 20 contractors are:

- Banta-Carbona Irrigation District
- Broadview Water District
- Centinella Water District
- City of Tracy
- Coehlo Family Trust
- Del Puerto Water District
- Eagle Field Water District
- Fresno Slough Water District
- James Irrigation District
- Laguna Water District
- Mercy Springs Water District
- Oro Loma Water District
- Patterson Water District
- Plain View Water District<sup>3</sup>
- Reclamation District 1606
- The West Side Irrigation District
- Tranquillity Irrigation District
- Tranquillity Public Utilities District
- West Stanislaus Water District
- Widren Water District

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<sup>1</sup> Exchange Contractors are contractors who had previous San Joaquin River water rights that are now supplied by Reclamation.

<sup>2</sup> The renewals of long-term water service and repayment contracts for these four districts, the California Department of Fish and Game, and the cities of Avenal, Coalinga, and Huron are analyzed under separate cover in the San Luis Unit Environmental Impact Statement (Reclamation 2004, in process).

<sup>3</sup> Since the writing of this EA, Plain View Water District has merged with Byron-Bethany Irrigation District. Consequently, Plain View Water District no longer exists as a legal entity. Byron-Bethany Irrigation District will execute the proposed water service contract for water service to the lands previously with Plain View Water District. Because this EA was prepared prior to the merger, both districts are analyzed separately.

A description of each of the 20 contractors and a discussion of their individual CVP allocations and the status of the existing long-term contracts are included in Section 3.1 of this EA.

## **RELATION TO THE CVPIA PEIS**

The CVPIA PEIS provided a programmatic evaluation of the impacts of implementing the CVPIA (Reclamation and Service 1999). Four alternatives, 17 supplemental analyses, the Preferred Alternative, and a No-Action Alternative were evaluated in the PEIS. The impact analyses in the PEIS were completed at a sub-regional level, but presented within the PEIS on a regional basis for the Sacramento Valley, San Joaquin Valley, and Tulare Lake regions. The PEIS No-Action Alternative assumed that existing long-term water service contracts would be renewed under the same terms as expiring contracts. The CVPIA PEIS included a Preferred Alternative that addressed the regional impacts and benefits of the general method that Reclamation anticipated for implementation of the CVPIA, including long-term contract renewal.

Following completion of the PEIS, Reclamation is preparing additional environmental documentation for the renewal of long-term water service and repayment contracts, including this EA, which addresses specific impacts relating to contract renewals within the DMC Unit of the Delta Division.

## **STUDY AREA**

The study area for this EA includes portions of Fresno, Merced, San Joaquin, and Stanislaus Counties. The study area is further defined as including the service areas of the 20 DMC Unit contractors listed above.

## **CONTRACT PERIOD**

The term for agricultural (irrigation) water service contracts will be 25 years, the term for mixed agricultural/M&I water service contracts will be 25 years, and the term for M&I-only long-term water service contracts will be 40 years.

The analysis for this EA was conducted for projected conditions to the year 2030, which will extend through the first period of renewal for the 25-year long-term water service contracts. No interim time period conditions were considered or evaluated with respect to build-out conditions or changes in the CVP contract.

## **PUBLIC INVOLVEMENT PROCESS**

Reclamation started the preparation of this EA during the scoping phase. Scoping served as a fact-finding process that helped identify public concerns and recommendations about the NEPA process, issues that would be addressed in this EA, and the scope and level of detail for analyses. Scoping activities began in October 1998 after Reclamation issued a Notice of Intent to prepare the environmental documents on the long-term contract renewal of CVP water service and repayment contracts.

The long-term contract renewal process was conducted as a public process. Throughout the contract renewal process, meetings were held with the contractors, other agencies, interest groups, and the public. Issues raised during the public involvement process were addressed in the negotiation process and were used in the preparation of this EA. A more detailed discussion of the public involvement process is provided in Chapter 5 of this EA.

## **EFFECTS OF RELATED ACTIVITIES ON WATER SUPPLY RELIABILITY SOUTH OF THE DELTA**

Reclamation is implementing several activities as part of its obligation to manage and operate the CVP. In addition to the CVPIA implementation, several related activities continue to affect Reclamation's ability to deliver water to areas south of the Delta. For instance, delivery of water to the DMC Unit begins with controlled releases of water from Shasta Reservoir, followed by activities in the Delta that ultimately result in deliveries to the DMC Unit contractors. However, these and several other related activities north of and within the Delta continue to affect and often constrain Reclamation's ability to deliver water south of the Delta. In order to better understand how these related activities could affect south-of-Delta deliveries, it is helpful to first review DMC Unit facilities and operations that depend on water originating north of the Delta. This section then summarizes the general goals of CVPIA implementation, which shows how many CVPIA activities potentially affect south-of-Delta deliveries. This is followed by an examination of the agreements, water rights processes, decisions, policies, operations, and facilities that can affect south-of-Delta deliveries. This section is intended to provide a sense of the range and magnitude of competing demands on north-of-Delta and Delta water supply, and their general effects on south-of-Delta deliveries. On February 17, 2004, in testimony to the Senate Committee on Agriculture and Water Resources, the Executive Director of the San Luis and Delta-Mendota Water Authority cited the implementation of three federal statutes (the Endangered Species Act, the CVPIA, and the Clean Water Act) as having significantly rededicated water historically used by the south-of-Delta CVP agricultural contractors to other purposes and noted that the reliability of water supplies for the 24 south-of-Delta CVP agricultural service contractors went from 92 percent on average in

1991 to around 50 percent under the regulatory baseline described in the CALFED Record of Decision (discussed below). Several future operational activities have a bearing on south-of-Delta reliability, as reviewed below.

## **IMPLEMENTATION OF THE CVPIA**

The renewal of DMC Unit long-term contracts is being carried out in parallel with the implementation of the CVPIA. A fundamental understanding of the CVPIA is therefore important to understanding the contract renewal process. Reclamation's evolving mission was written into law on October 30, 1992, with the passage of Public Law 102-575, the Reclamation Projects Authorization and Adjustment Act of 1992. Included in the law was Title XXXIV, the CVPIA. The CVPIA amended previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic water supply uses, and fish and wildlife enhancement as having an equal priority with power generation. Among the changes mandated by the CVPIA are:

- Dedicating 800,000 acre-feet annually to fish, wildlife, and habitat restoration.
- Authorizing water transfers outside the CVP service area.
- Implementing an anadromous fish restoration program.
- Creating a restoration fund financed by water and power users.
- Providing for the Shasta Temperature Control Device.
- Implementing fish passage measures at Red Bluff Diversion Dam to increase the CVP yield.
- Mandating firm water supplies for Central Valley wildlife refuges.
- Meeting federal trust responsibility to protect fishery resources (Trinity River).

The CVPIA is being implemented on a broad front. The CVPIA PEIS analyzes projected conditions in 2022, 30 years from the CVPIA's adoption in 1992. It was released in October 1999, and the CVPIA Record of Decision was signed on January 9, 2001.

Operations of the CVP reflect provisions of the CVPIA, particularly Sections 3406(b)(1), (b)(2), and (b)(3). The Department of the Interior's (Interior) Decision on Implementation of Section 3406(b)(2) of the CVPIA (October 5, 1999) (Interior 2003) provides the basis for implementing upstream and Delta actions affecting CVP delivery capability.

## **DELTA-MENDOTA CANAL UNIT FACILITIES AND OPERATIONS**

The CVP supply for the DMC Unit contractors originates as uncontrolled and controlled releases of water from north of the Delta reservoirs including Shasta, Trinity, Folsom and others that is then transported down various rivers to the south Delta. The Delta Cross Channel then transfers this CVP water to the Tracy Pumping Plant in the southern end of the Delta. The Tracy Pumping Plant then lifts the water into the Delta-Mendota Canal, which delivers water to the CVP contractors. The CVP water also can be conveyed to the San Luis Reservoir for deliveries to CVP contractors that divert from the San Luis Canal. San Luis Reservoir conveyances and the diversions directly from the Delta-Mendota Canal by certain contractors in the San Luis Unit are described in detail in the draft environmental impact statement for the San Luis Unit, which will be available under separate cover. The remainder of this discussion describes the primary facilities and operations of the DMC Unit of the Delta Division. Section 3.1 of this EA includes a map (Figure 3.1-1) of the DMC Unit.

### **DELTA CROSS CHANNEL**

The Delta Cross Channel is a 1.2-mile-long, controlled diversion channel between the Sacramento River and the Mokelumne River. At the north end of the Delta, the Delta Cross Channel combines with several natural channels that carry the water approximately 50 miles to the Tracy Pumping Plant. Reclamation believes that the Delta Cross Channel and the training works in the San Joaquin River are necessary to prevent lesser quality water in the San Joaquin River from getting into the Tracy Pumping Plant.

To hold off saltwater intrusion in the Delta and to dilute local pollution, the Delta Cross Channel draws fresh water from the Sacramento River to the Mokelumne River. The diversion also provides an adequate supply of water to the Delta-Mendota Canal and improves irrigation supplies in the Delta. During high water, Reclamation closes the control gates of the channel to prevent flood stages in the San Joaquin section of the Delta. Gates are reopened after the flood danger passes to allow Sacramento River water through to the Tracy Pumping Plant. The Delta Cross Channel is also operated to improve conditions for out-migrating chinook salmon and steelhead trout.

### **TRACY PUMPING PLANT**

Construction of the Tracy Pumping Plant, which consisted of an inlet channel, pumping plant, and discharge pipes, was completed in 1951. Water received from the Delta is lifted 197 feet, pumped through discharge pipes, and carried approximately one mile up an inclined grade to the Delta-Mendota Canal. The power to run the pumps is supplied by CVP power plants. The Delta-Mendota Intake Channel, an earth-lined section approximately 2.5 miles long, also includes a fish screen that was built to intercept

downstream migrant fish so that they may be returned to the main channel to resume their journey to the ocean.

### **DELTA-MENDOTA CANAL**

The Delta-Mendota Canal, the second largest of the CVP waterways, was completed in 1951. It includes a combination of both concrete-lined and earth-lined sections and is about 117 miles in length. It carries water southeasterly from the Tracy Pumping Plant along the west side of the San Joaquin Valley for irrigation supply, for use in the DMC Unit, and to replace San Joaquin River water stored behind Friant Dam and used in the Friant-Kern and Madera Canals. The canal transports water from the Tracy Pumping Plant to the Mendota Pool, which is controlled by a concrete storage dam that was constructed in 1919. The Mendota Pool is located at the confluence of the San Joaquin River and the north fork of the Kings River, approximately 30 miles west of the City of Fresno.

### **MAJOR AGREEMENTS AND PROCESSES AFFECTING CVP AND DELTA OPERATIONS**

The agreements and understanding that most broadly govern Reclamation's capabilities to supply water to the DMC Unit are described below. This section describes the operational characteristics of the following major ongoing activities affecting DMC Unit water supply reliability:

- CVP water rights
- State Board water rights process
- State Water Resources Control Board Decision 1641 (D-1641)
- CALFED Agreements
- Environmental Water Account (EWA)
- Trinity River Division operations
- CVPIA Section 3406(b)(2)
- Coordinated Operations Agreement (COA)
- Operations Criteria and Plan (OCAP)
- Joint Point of Diversion (JPOD)

- Freeport Regional Water Project
- San Joaquin River Agreement/Vernalis Adaptive Management Plan (VAMP)
- Tracy Fish Facility Improvement Program
- South Delta Improvements Project
- Delta-Mendota Canal/California Aqueduct Intertie
- Conformed Place of Use
- Water transfers
- North-of-Delta Offstream Storage Project
- Grasslands Bypass Project (GBP)

These water rights, State Board decisions, and joint agreements with the California Department of Water Resources (DWR) and other agencies define general parameters and guidelines for CVP operations and for coordination with other entities. Trinity River operations are discussed in this section because of their impact on inflows to the Delta and, therefore, on the volume of water available for export.

The COA and the OCAP are presented last in this sequence of agreements and understandings because they present guidelines for actual operation of CVP facilities that are designed to conform to the requirements of other agreements and initiatives, both actual and anticipated. Therefore, both the COA and the OCAP are important points of reference for assessing the impact of related projects on water supply reliability to the DMC Unit.

### **CVP WATER RIGHTS**

Federal law provides that Reclamation obtain water rights for its projects and administer its projects pursuant to state law relating to the control, appropriation, use, or distribution of water used in irrigation, unless the state law is inconsistent with expressed or clearly implied Congressional directives. See 43 USC 383; *California v. United States*, 428 USC 645, 678 (1978); *appeal on remand*, 694 F.2d 117 (1982). Reclamation must operate the CVP in a manner that does not impair senior or prior water rights.

Reclamation has been issued water rights to appropriate water for the CVP by the State Board. Many of the rights for the CVP were issued pursuant to the State Board's

Decision 990, adopted in February 1961. Several other decisions and State Board actions cover the remaining rights for the CVP. These rights contain terms and conditions that must be complied with in the operation of the CVP. Over time, the State Board has issued further decisions that modify the terms and conditions of CVP water rights. In August 1978, it adopted the Water Quality Control Plan for the Delta and Suisun Marsh (WQCP), which established revised water quality objectives for flow and salinity in the Delta and Suisun Marsh. In its Decision 1485 (D-1485), also adopted in August 1978, the State Board required Reclamation and DWR to operate the CVP and State Water Project (SWP) to meet all of the 1978 WQCP objectives, except some of the salinity objectives in the southern Delta. In addition, the State Board's November 1983 Decision 1594 and its February 1984 Order WR 8402 defined Standard Permit Term 91 to protect CVP and SWP stored water from diversion by others. Permit terms and requirements, as they relate to operations, are discussed in the OCAP. In 1991, the State Board adopted a water quality control plan that superseded parts of the 1978 WQCP, but did not revise the DWR's and Reclamation's water rights to reflect the objectives in the 1991 plan.

On May 22, 1995, the State Board adopted a water quality control plan for the Bay-Delta estuary (1995 Bay-Delta Plan). The 1995 Bay-Delta Plan superseded both the 1978 and 1991 plans. On December 29, 1999, the State Board adopted (and then revised on March 15, 2000) D-1641, amending certain terms and conditions of the water rights of the SWP and CVP. D-1641 substituted certain objectives adopted in the 1995 Bay-Delta Plan for water quality objectives required to be met as terms and conditions of the water rights of the SWP and CVP.

### **STATE BOARD WATER RIGHTS PROCESS**

The purpose of the State Board's water rights process for Delta water quality and quantity was to develop a methodology to provide adequate flows to meet the Bay-Delta Plan Accord. The State Board evaluated several alternatives that would require different agencies, including the CVP and the SWP, to release water in a manner that would protect Delta quality.

This process increased the amount of water provided by other water rights holders to meet water quality standards for the Bay-Delta, but it was anticipated that the impacts to the CVP water supply would not be more severe than the impacts presented in the CVPIA PEIS (Reclamation and USFWS 1999) and this EA. Consequently, the operations of upstream projects changed to comply with water quality standards set forth in D-1641. In modeling for the CVPIA PEIS and this EA, it was assumed that the Bay-Delta Plan Accord criteria would be the long-term plan for the Delta. If instream flows provided by the other water rights holders increase, some portion of the environmental flows required by the

CALFED Ecosystem Restoration Program could be satisfied by this water rights process, which may reduce the amount of water that the program needs to acquire from willing sellers. It may also reduce the amount of water that the program needs to develop or may allow the developed water to be used more effectively in meeting program objectives. Any additional demand on water right holders could decrease the amount of water available for transfer.

### **STATE WATER RESOURCES CONTROL BOARD DECISION 1641**

The State Board imposes a myriad of constraints upon the operations of the CVP and SWP in the Delta. With D-1641, it implemented the objectives set forth in the 1995 Bay-Delta Plan, imposed flow and water quality objectives upon the CVP and SWP to ensure the protection of beneficial uses in the Delta, and granted conditional changes to points of diversion for each project.

The various flow objectives and export constraints are designed to protect fisheries. These objectives include specific outflow requirements throughout the year, specific export constraints in the spring, and export limits based on a percentage of estuary inflow throughout the year. The water quality objectives are designed to protect agricultural, M&I, and fishery uses and vary throughout the year and by the wetness of the year.

On December 29, 1999, the State Board adopted and then revised (on March 15, 2000) D-1641, amending certain terms and conditions of the water rights of the SWP and CVP. D-1641 substituted certain objectives adopted in the 1995 Bay-Delta Plan for water quality objectives that had to be met under the water rights of the SWP and CVP. In effect, D-1641 obligates the SWP and CVP to comply with the objectives of the 1995 Bay-Delta Plan. The requirements in D-1641 address the standards for fish and wildlife protection, M&I water quality, agricultural water quality, and Suisun Marsh salinity. D-1641 also authorizes the SWP and CVP to jointly use one another's points of diversion in the southern Delta, with conditional limitations and required response coordination plans. D-1641 modified the Vernalis salinity standard under State Board Decision 1422 to the corresponding Vernalis salinity objective in the 1995 Bay-Delta Plan.

### **CALFED Agreements**

In the August 28, 2000 CALFED Bay-Delta Program (CALFED) Record of Decision, Reclamation and other state and federal agencies committed to implementing a long-term plan to restore the Bay-Delta. The plan consists of many activities including storage, conveyance, ecosystem restoration, levee integrity, watersheds, water supply reliability, water use efficiency, water quality, water transfers, and science.

**COORDINATED WATER OPERATIONS**

The Implementation Memorandum of Understanding, signed on August 28, 2000, memorialized the operations decision-making process that had evolved through the CALFED Operation Coordination Group (Ops Group) process, including the Operations Decision Making Process (Attachment D of the Record of Decision). This process consists of staff-, stakeholder-, and policy-level forums for addressing operational issues.

One of these forums, the Water Operations Management Team, consists of managers from Reclamation, the Service, NOAA Fisheries, the California Department of Fish and Game (CDFG), DWR, and the U.S. Environmental Protection Agency (USEPA). This team provides a frequent opportunity for managers to discuss CVP and SWP operations and related fishery issues.

The Ops Group was established by the 1994 Framework Agreement. The Ops Group (consisting of Reclamation, the Service, DWR, CDFG, the State Board, NOAA Fisheries, and USEPA) coordinates the operation of the projects with fisheries protection and implementation of the CVPIA. Shortly after its formation, the Ops Group provided a forum for stakeholders to provide input into the operations decision process, data exchange, and information dissemination. The CVPIA Section 3406(b)(2) Implementation Team assists Interior with the implementation of CVPIA Section 3406(b)(2). The Data Assessment Team is an agency-driven group that includes stakeholder participation to review biological data and provide input to Reclamation and DWR on actions to protect fish. The Operations and Fisheries Forum, which has been meeting since 1995, is a stakeholder-driven forum to aid in information dissemination and to facilitate discussion regarding operation of the CVP and SWP.

The Ops Group developed and implemented the Chinook Salmon Protection Decision Process. The process includes monitoring of environmental conditions and salmon movement, data assessment procedures, specific indicators that spring-run chinook salmon are entering the Delta from upstream or being entrained at the SWP or CVP export facilities, and operational responses to minimize the effects of SWP and CVP facilities on emigrating spring-run salmon. The Ops Group's decision-making process is also used to protect other chinook salmon runs.

**ENVIRONMENTAL WATER ACCOUNT**

The EWA consists of two primary elements:

- Assisting fish population recovery for at-risk native fish species.

- Increasing water supply reliability by reducing uncertainty associated with fish recovery actions.

As specified in the CALFED Record of Decision, the EWA was implemented to provide sufficient water and has been combined with the Ecosystem Restoration Program to address CALFED's fish protection, restoration, and recovery needs, while enhancing the predictability of CVP and SWP operations and improving the confidence in and reliability of water allocation forecasts. In the Delta environment, EWA resources and operational flexibility are used as both a real-time fish management tool to improve the passage and survival of at-risk fish species in the Delta environment and for specific seasonal planned fish protection operations at the CVP and SWP Delta pumps.

The EWA agencies, which include Reclamation, the Service, NOAA Fisheries, DWR, and CDFG, have established protocols for the expenditure of water resources following the guidance given in the CALFED Record of Decision. EWA resources may be used to temporarily reduce SWP Delta exports at Banks Pumping Plant for fish protection purposes above D-1641 requirements and to coordinate with the implementation of Section 3406(b)(2) fish actions pursuant to the CVPIA. EWA resources also may be used to temporarily reduce CVP Tracy Pumping Plant export for fish protection purposes in addition to the resources available through Section 3406(b)(2) of the CVPIA.

The EWA described in the CALFED Record of Decision is a four-year program, which the EWA agencies have been implementing since 2000. However, the EWA agencies believe a long-term EWA is critical to meet the CALFED Record of Decision goals of increased water supply reliability to water users, while at the same time ensuring the availability of sufficient water to meet fish protection, restoration, and recovery needs. Thus, the EWA agencies envision implementation of a long-term EWA as part of the operation of the CVP and SWP. Future implementation of a long-term EWA is subject to NEPA and the California Environmental Quality Act (CEQA).

The commitment to not reduce project water deliveries resulting from EWA actions to benefit fish is predicated on three tiers of protection described in the CALFED Record of Decision.

The CALFED Record of Decision establishes EWA purchased (fixed) asset targets at 185,000 acre-feet, with 35,000 acre-feet coming from sources upstream of the Delta and 150,000 acre-feet coming from sources south of the Delta or the functional equivalent of these assets. In reality, more water is available for transfer from areas upstream of the Delta, and at a lower cost, than from areas south of the Delta.

If the amount of water being transferred from SWP contractors from upstream of the Delta increases, then the SWP's capacity to convey EWA water will decrease. In addition, the conveyance of the Sacramento Valley Water Management Agreement settlement water supplies for SWP contractors will also decrease the SWP's conveyance capacity for EWA water. Transfers under this agreement are expected to begin no sooner than 2005. Because SWP allocations are unknown when contracts are being negotiated, EWA contracts will use options for part of the purchases upstream of the Delta or contract provisions tied to SWP allocation to accommodate uncertainty over conveyance capacity. Water purchases south of the Delta can be tied directly to SWP allocations in many instances. The EWA and the EWA Operating Principles Agreement have recently been extended through December 31, 2007, in a memorandum of understanding by and between Reclamation, the Service, NOAA Fisheries, CDFG, and DWR.

### **TRINITY RIVER DIVISION OPERATIONS**

The Trinity River Division, completed in 1964, includes facilities to store and regulate water in the Trinity River, as well as facilities to divert water to the Sacramento River basin. Trinity Dam is located on the Trinity River and regulates the flow from a drainage area of approximately 720 square miles. The dam was completed in 1962, forming Trinity Lake, which has a maximum storage capacity of approximately 2.4 million acre-feet. The mean annual inflow to Trinity Lake from the Trinity River is about 1.2 million acre-feet per year. Historically, an average of about two-thirds of the annual inflow has been diverted to the Sacramento River basin (1991–2003). Trinity Lake stores water for release to the Trinity River and for diversion to the Sacramento River via Lewiston Reservoir, Carr Tunnel, Whiskeytown Reservoir, and Spring Creek Tunnel, where it commingles in Keswick Reservoir with Sacramento River water released from both Shasta Dam and the Spring Creek Debris Dam.

Since 1964, a portion of the flow from the Trinity River basin has been exported to the Sacramento River basin through CVP facilities. Exporting Trinity River water to the Sacramento River basin provides increased water supply for the CVP and is a major source of CVP power generation. The amounts and timing of the Trinity River exports are determined after consideration is given to the forecasted available Trinity River water supply and Trinity River in-basin needs, including carryover storage. Trinity River exports are also a key component of water temperature control operations on the upper Sacramento River.<sup>4</sup>

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<sup>4</sup> DWR's 1991 Drought Water Bank purchased over 800,000 acre-feet and conveyed approximately 470,000 acre-feet of purchased water across the Delta.

The Trinity River Diversion diverts water from the Trinity River at Lewiston Dam via the Clear Creek Tunnel and passes this flow through the Judge Francis Carr Powerhouse as it is discharged into Whiskeytown Lake on Clear Creek. Whiskeytown Lake is normally operated to:

- Regulate inflows for power generation and recreation.
- Support upper Sacramento River temperature objectives.
- Provide releases to Clear Creek consistent with the objectives of the CVPIA's Anadromous Fish Restoration Program. Although Whiskeytown Lake stores up to 241,000 acre-feet, this storage is not normally used as a source of water supply.

From Whiskeytown Lake, water is released through the Spring Creek Power Conduit to the Spring Creek Power Plant and into Keswick Reservoir. All of the water diverted from the Trinity River, plus a portion of Clear Creek flows, is diverted through the Spring Creek Power Conduit into Keswick Reservoir. Actual instream flows below Whiskeytown Dam to Clear Creek are determined in accordance with Interior's Decision on Implementation of Section 3406(b)(2) of the CVPIA (Interior 2003). Instream flow objectives below Whiskeytown Dam are based on recommendations from the Service, NOAA Fisheries, and the CDFG pursuant to annual CVPIA Section 3406(b)(2) Implementation Team coordination. Typical annual instream fishery considerations in Clear Creek include spawning flows for fall-run chinook salmon as well as water temperatures in summer for steelhead and in late summer for spring-run chinook salmon.

Temperature control objectives for the Trinity River are set forth in the State Board's Water Rights Order 90-5. Temperature objectives vary by reach and by season. Between Lewiston Dam and the Douglas City bridge, the daily average temperature should not exceed 60° Fahrenheit (F) from July 1 to September 14, and 56°F from September 15 to October 1. From October 1 to December 31, the daily average temperature between Lewiston Dam and the confluence of the North Fork Trinity River should not exceed 56°F. Reclamation consults with the Service to establish a schedule of releases from Lewiston Dam that can best achieve these objectives.

To increase CVP water supply, export volumes from the Trinity River are made in coordination with the operation of other CVP water supply reservoirs, generally based on reservoir refill potential and CVP Delta export water demand. Other important considerations affecting the timing of Trinity River exports are based on the utility of power generation and allowances for normal maintenance of the diversion works and generation facilities.

## **Trinity River Flow Evaluation Study**

The Trinity River Flow Evaluation Study (TRFES), begun by the Service in 1983, evaluated four annual flow volumes: 140,000 acre-feet, 220,000 acre-feet, 287,000 acre-feet, and 340,000 acre-feet. Flow evaluation studies were conducted annually between 1983 and 1994 by Service biologists. The TRFES report (Service and Hoopa Valley Tribe 1999) concluded that the flow alternatives identified for study in the 1981 Secretarial decision did not meet the biological and geomorphic habitat requirements necessary to restore naturally produced salmonid populations in the main stem of the Trinity River. The TRFES recommended specific annual flow releases, sediment management, and channel rehabilitation to create and sustain a dynamic alluvial channel that would provide the necessary habitat.

The Preferred Alternative agreed to by the Secretary and the Hoopa Valley Tribal Council in the Record of Decision for the Trinity River Main Stem Fishery Restoration EIS/EIR (Interior 2000) adopted the recommendations contained in the TRFES. The Preferred Alternative is the Flow Evaluation Alternative, which includes increased variable instream flow releases from Lewiston Dam, a coarse sediment introduction program, 47 new channel projects (mechanical channel rehabilitation), an adaptive management program, and a watershed restoration program. The total volume of water recommended for release from the Trinity River Division to the Trinity River ranged between approximately 369,000 acre-feet and 815,000 acre-feet, depending on the annual hydrology (water-year type) as determined on April 1 of each year. The recommended flow regimens link two essential purposes deemed necessary to restore and maintain the Trinity River's fishery resources: (1) flows to provide physical fish habitat (i.e., appropriate depths and velocities and suitable temperature regimes for anadromous salmonids) and (2) flows to restore the riverine processes that create and maintain the structural integrity and spatial complexity of the fish habitats.

Based on the Record of Decision (Interior 2000), 368,000 acre-feet are allocated annually for Trinity River flows. Due to ongoing litigation on the Record of Decision, the Federal District Court for the Eastern District of California issued an order on December 10, 2002, that directed the CVP to release 368,000 acre-feet during critical Trinity River inflow years and 453,000 acre-feet under all other conditions. A July 2004 opinion by the Ninth Circuit Court approved the federal plan to implement the congressional mandate to increase flows into the Trinity River to restore fish habitat. The plan calls for diverting from 368,900 acre-feet to 815,200 acre-feet annually, depending on the annual hydrology. This amount is scheduled in coordination with the Service to best meet habitat, temperature, and sediment transport objectives in the Trinity River basin.

**CVPIA SECTION 3406(B)(2)**

On May 9, 2003, Interior issued its Decision on Implementation of Section 3406(b)(2) of the CVPIA (Interior 2003). Dedication of Section 3406(b)(2) water occurs when Reclamation takes a fish or wildlife habitat restoration action based on the Service's recommendations (and in consultation with NOAA Fisheries and CDFG), pursuant to the primary purpose of Section 3406(b)(2)—to contribute to the Anadromous Fish Restoration Program's flow objectives for CVP streams. Dedication and management of Section 3406(b)(2) water may also assist in meeting the fishery objectives of the 1995 bay-Delta Plan and helps meet the needs of fish listed as threatened or endangered since the enactment of the CVPIA.

Interior's decision describes how the amount of dedicated Section 3406(b)(2) water is determined. Planning and accounting for Section 3406(b)(2) actions are done cooperatively and occur primarily through weekly meetings of the CVPIA Section 3406(b)(2) Implementation Team (discussed above under CALFED Agreements, Coordinated Water Operations). Actions usually take one of two forms: in-stream augmentation below CVP reservoirs or reductions in CVP Tracy Pumping Plant pumping in the Delta.

The implementation of Section 3406(b)(2) has resulted in a shift in the rates and timing of CVP reservoir releases to protect anadromous fish. This has reduced the CVP water supply and, at times, enhanced the SWP water supply because of the provisions of Articles 6(h) and 6(i) of the COA. The CVPIA led to Refuge Water Supply contracts, which, for Sacramento Valley refuges, may increase the amounts of water delivered annually. These additional deliveries were not part of the COA. The additional refuge supplies, if treated as Sacramento Valley in-basin uses, may, at times reduce the CVP and SWP supply available for Delta export.

**COORDINATED OPERATIONS AGREEMENT**

The CVP and the SWP use a common water supply in the Central Valley of California. The DWR and Reclamation have built water conservation and water delivery facilities in the Central Valley that deliver water supplies to affected water rights holders as well as project contractors. The State Board places conditions on the DWR's and Reclamation's water rights to protect the beneficial uses of water within each respective project and jointly for the protection of beneficial uses in the Sacramento Valley and the Sacramento-San Joaquin Delta Estuary. Reclamation and DWR operate the CVP and SWP to meet these requirements through the COA.

The COA defined the project facilities and their water supplies and sets forth procedures for:

- Coordinating operations.
- Identifying formulas for sharing joint responsibilities for meeting Delta standards and other legal uses of water.
- Identifying how unstored flow will be shared.
- Setting up a framework for exchange of water and services between the CVP and SWP.
- Providing for a five-year review.

The CVP and SWP use the Sacramento River and the Delta as common conveyance facilities. Reservoir releases and Delta exports must be coordinated to ensure that each project achieves its share of benefits from shared water supplies and bears its share of joint obligations to protect beneficial uses.

### **Obligations for In-Basin Uses**

In-basin uses are defined in the COA as legal uses of water in the Sacramento Basin, including the water required under the D-1485 Delta standards (D-1485 ordered the CVP and SWP to guarantee certain conditions for water quality protection for agricultural, M&I, and fish and wildlife uses). Each project is obligated to ensure that water is available for these uses, but the degree of obligation is dependent on several factors and changes throughout the year.

Balanced water conditions are defined in the COA as periods when it is agreed that releases from upstream reservoirs plus unregulated flows approximately equal the water supply needed to meet Sacramento Valley in-basin uses plus exports. Excess water conditions are periods when it is agreed that releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in-basin uses plus exports. Reclamation's Central Valley Operations Office and DWR's SWP Operations Control Office jointly decide when balanced or excess water conditions exist.

During excess water conditions, sufficient water is available to meet all beneficial needs, and the CVP and SWP are not required to supplement the supply with water from reservoir storage. Under Article 6(g), Reclamation and DWR have the responsibility (during excess water conditions) to store and export as much water as possible, within physical and contractual limits. In these cases, accountability is not required. However, during balanced water conditions, the CVP and SWP share the responsibility in meeting in-basin uses. Balanced water conditions are further defined according to whether water from

upstream storage is required to meet Sacramento Valley in-basin use or unstored water is available for export.

When water must be withdrawn from reservoir storage to meet in-basin uses, 75 percent of the responsibility is borne by the CVP and 25 percent is borne by the SWP. When unstored water is available for export (i.e., Delta exports exceed storage withdrawals while balanced water conditions exist), the sum of CVP stored water, SWP stored water, and the unstored water for export is allocated 55 percent and 45 percent to the CVP and SWP, respectively.

### **Accounting and Coordination of Operations**

Reclamation and DWR coordinate daily to determine target Delta outflow for water quality, reservoir release levels necessary to meet in-basin demands, schedules for joint use of the San Luis Unit facilities, and the use of each other's facilities for pumping and wheeling.

During balanced water conditions, daily accounts are maintained of the CVP and SWP obligations. This accounting allows for flexibility in operations and avoids the necessity of daily changes in reservoir releases that originate several days' travel time from the Delta. It also means adjustments can be made "after the fact" rather than by prediction for the variables of reservoir inflow, storage withdrawals, and in-basin uses.

The accounting language of the COA provides the mechanism for determining the responsibility of each project; however, real time operations dictate actions. For example, conditions in the Delta can change rapidly. Weather conditions, combined with tidal action, can quickly affect Delta salinity conditions and, therefore, the Delta outflow objective. If, in this circumstance, it is decided the reasonable course of action is to increase upstream reservoir releases, then the response will likely be to increase releases from Folsom Lake first. Lake Oroville water releases require about three days to reach the Delta, while water released from Lake Shasta requires five days to travel from Keswick to the Delta. As water from the other reservoirs arrives in the Delta, Folsom Lake releases could be adjusted downward. Any imbalance in meeting each project's obligation would be captured by the COA accounting.

Reservoir release changes are one means of adjusting to changing in-basin conditions. Changes in Delta outflow can also be immediately achieved by increasing or decreasing project exports. As with changes in reservoir releases, imbalances in meeting project obligations are considered in the COA accounting.

During periods of balanced water conditions, when real-time operations dictate project actions, an accounting procedure tracks the water obligations of the CVP and SWP. Each project maintains a daily and accumulated accounting. The account represents the imbalance resulting from actual coordinated operations compared to the COA-defined sharing of obligations and supply. The project that is “owed” water (i.e., the project that provided more or exported less than its COA-defined share) may request that the other project adjust its operations to reduce or eliminate the accumulated account within a reasonable time.

The duration of balanced water conditions varies from year to year. Some very wet years have had no periods of balanced conditions, while very dry years may have had long continuous periods of balanced conditions, and still other years may have had several periods of balanced conditions interspersed with excess water conditions. Account balances continue from one balanced water condition through the excess water condition and into the next balanced water condition. When the project that is owed water enters into flood control operations at Shasta Lake or Lake Oroville, the accounting is zeroed out for that respective project.

### **Changes in Operations Coordination Environment Since 1986**

Implementation of the COA has evolved continually since 1986 as changes have occurred to CVP and SWP facilities, to project operations criteria, and to the overall physical and regulatory environment in which the operations coordination takes place. Since 1986, new facilities that were not part of the original COA have been incorporated into the operations. D-1641 imposed new water quality and flow standards; the CVPIA CVPIA has changed how the CVP is operated; and finally, the federal Endangered Species Act responsibilities have affected the operations of both the CVP and SWP. The following is a description of significant changes that have occurred since 1986 with respect to the COA. Included after each item is an explanation of how it related to the COA and its general effect on the accomplishments of the CVP and SWP.

### **Bay-Delta Accord and Subsequent SWRCB Implementation of D-1641**

The December 1994 Bay-Delta Accord committed the CVP and the SWP to a set of Delta habitat protection objectives that were eventually incorporated into the 1995 Bay-Delta Plan, and later, along with the VAMP, were implemented by D-1641. The actions taken by the CVP and SWP in implementing D-1641 significantly reduced the export water supply of both projects. Article 11 of the COA describes the options available to the United States for responding to the establishment of new Delta standards.

The first option is to amend the COA to provide for continued implementation to accomplish the purposes of the COA. Although the CVP and SWP continue to be operated in coordination to meet D-1641, neither an amendment of the COA nor an evaluation of the new Delta standards (for consistency with congressional directives) has been undertaken. Significant new elements in the D-1641 standards include (1) the X2 standards, (2) export to inflow ratios, (3) real-time Delta Cross Channel operation, (4) San Joaquin River flow standards, and (5) recognition of the CALFED Ops Group process for flexibility in applying or relaxing certain standards.

### **Loss of 195,000 Acre-Feet of D-1485 Condition 3 Replacement Pumping**

The COA affirmed the SWP's commitment to provide replacement capacity to the CVP to make up for May and June pumping reductions imposed by D-1485 in 1978. In the evolution of COA operations since 1986, D-1485 was superseded, and 1995 Bay-Delta Plan growth and other pumping constraints reduced available surplus capacity. The CVP has not received replacement pumping since 1993. Since then, there have been (and in the current operations environment, there will continue to be) many years in which the CVP will be limited by insufficient Delta export capacity to convey its water supply. The loss of up to 195,000 acre-feet of replacement pumping has diminished the accomplishments anticipated by the CVP under the COA.

### **Periodic Review of the Coordinated Operations Agreement**

Article 14a of the COA specifies the parties to review operations every five years. The Agreement proceeds to state that the parties shall:

- Compare the relative success each party has had in meeting its objectives.
- Review operation studies supporting the COA.
- Assess the influence of Article 6 in meeting each party's future objectives.

Article 14a further states, "The parties shall agree upon revisions, if any, of the factors and procedures in Article 6, Exhibits B and D, and the Operation Study used to develop Exhibit B."

Beginning in 1995 and continuing under D-1641, the CVP and SWP have been operating to meet the revised Delta standards. The changes that have occurred to the CVP and SWP since 1986 suggest a COA review would be appropriate. The August 2000 CALFED Record of Decision included as an implementation commitment that DWR and Reclamation intend to modify the 1986 COA to reflect the many changes in regulatory standards, operating conditions, and new project features (such as the EWA) that have

evolved. Should that process indicate a change in the coordinated operation of the CVP and SWP, a review will be completed to determine the need to reinstate consultation under Section 7 of the Endangered Species Act.

### **OPERATIONS CRITERIA AND PLAN**

Reclamation and DWR propose to continue to operate the CVP and SWP to divert, store, and convey CVP and SWP water consistent with applicable law. The provisions and requirements of the CVPIA, D-1641, CALFED, and other agency mandates require that the operational roles and responsibilities of the SWP and CVP be reviewed and updated to provide appropriate long-term operating criteria and procedures for the two primary water storage and delivery projects affecting the waterways of the Central Valley.

The OCAP has been prepared to serve as a baseline description of the facilities and operating environment of the CVP and SWP. It identifies many factors influencing the physical and institutional conditions and decision-making process under which the CVP now operates. Regulatory and legal requirements are explained, and alternative operating models and strategies described.

It is envisioned that the OCAP will be used as a reference by technical specialists and policymakers in understanding how the CVP is operated. The OCAP includes numeric and nonnumeric criteria and strategies. Emphasis is given to explaining the analyses used to develop typical operating plans for simulated hydrologic conditions.

The OCAP covers the Trinity River, Shasta, Sacramento River, American River, Delta, West San Joaquin, and Friant Divisions of the CVP. Proposed CVP operational actions for consultation are presented in Table 1-1.

In addition to current-day operations, the following future actions are included in the OCAP:

- Increased flows in the Trinity River system.
- Increased pumping at Banks Pumping Plant (referred to as “8500 Banks”).
- The operation of future permanent operable barriers in the South Delta.
- An intertie between the California Aqueduct and the Delta-Mendota Canal.
- A long-term EWA

**Table 1-1  
OCAP Actions and Guiding Requirements**

<b>Action</b>	<b>Requirement for Action</b>
<b><i>I. Trinity River Division</i></b>	
Trinity Lake Operations	State Board Permit Order 124 Safety of Dams Criteria
Lewiston Dam releases and Trinity River flows	State Board permits for diversions from Trinity River 2000 Trinity Record of Decision <i>Westlands Water District et al., v. Interior</i> (Trinity litigation)
Whiskeytown Dam releases to Clear Creek	State Board permits for diversions from Trinity River, Clear Creek (permits specify minimum downstream releases) 1960 Memorandum of Agreement with CDFG (establishes minimum flows release to Clear Creek) 1963 release schedule Consistent with Anadromous Fish Restoration Program objectives (Appendix A to the October 5, 1999 Decision on Section 3406(b)(2) availability) Stability Criteria Thresholds of Trinity Storage
Townsend requirement	2000 Agreement with Service re Section 3406(b)(2) water
Spring Creek Debris Dam operations	1980 Memorandum of Agreement with CDFG, State Board
Diversions to Sacramento River	State Board WR 90-5 (temperature control objectives), State Board WR 91-1
Temperature Objectives	State Board WR 90-5, State Board WR 91-1
<b><i>II. Shasta Division</i></b>	
<b><i>State Board WR 90-5</i></b>	
Shasta Dam Operations	Regulating Criteria-Flood Control Act 1944 CVPIA-Temperature Control Device Operations
Keswick Dam releases to Sacramento River	1960 Memorandum of Agreement with CDFG: established flow objectives, minimum release in dry, critical years
Minimum flows of 3,250 cubic feet per second (cfs) October through March	1981 Agreement with CDFG: established normal-year minimum releases September-February State Board WR 90-5: established year-round minimum flows Anadromous Fish Restoration Program (Appendix A to the October 5, 1999 Decision on Section 3406(b)(2) implementation) and Section 3406(b)(2) availability Navigation flow requirement at Wilkins Slough CVPIA: ramping criteria consistent with Section 3406(b)(2) and (b)(9)
<b><i>III. Sacramento River Division</i></b>	
<b><i>State Board WR 90-5</i></b>	
Red Bluff Diversion Dam Operations	1986 Agreement with NOAA Fisheries et al., gates raised in winter months for fish passage
Gates raised from September 15 to May 14 with flexibility to temporarily lower gates in excess of pumping capacity	
Future installation of additional pumps	
Tehama-Colusa Canal Operations	Temporary diversion from Black Butte Reservoir (State Board permit)

**Table 1-1  
OCAP Actions and Guiding Requirements**

Action	Requirement for Action
Sacramento River Temperature objectives	State Board WR 90-5: temperature, objectives added to permits, modified 1960 Memorandum of Understanding with CDFG regarding minimum flows State Board WR 91-1 (temperature objectives)
Sacramento-Trinity Water Quality Monitoring Network	State Board WR 9-5, 91-1
Sacramento River Temperature Task Group	State Board 90-5, 91-1
ACID Diversion Dam ops	Reclamation contract (water service and diversion)
<b>IV. American River Division</b>	
Folsom Dam and Power Plant operations	U.S. Army Corps of Engineers Flood Control Manual, Flood Control Diagram (regulating criteria) 1996 Agreement with Sacramento Area Flood Control Agency (modified flood control criteria) Anadromous Fish Restoration Program (Appendix A to the October 5, 1999 Decision on Section 3406(b)(2) implementation and Section 3406(b)(2) availability Draft CDFG criteria pursuant to CVPIA Section 3406(b)(9) (addressing flow fluctuations) CVP local municipal diversions
Nimbus Dam operations and Lower American River flows Includes year-round temperature control	Anadromous Fish Restoration Program and Section 3406(b)(2) availability: minimum flows October-September, stability objectives Draft CDFG criteria pursuant to CVPIA Section 3406(b)(9) (addressing flow fluctuations)
Folsom South Canal operations	Contractual commitments
Freeport Regional Water Project	Contract with East Bay Municipal Utility District Sacramento County contract and water rights
<b>V. Eastside Division</b>	
New Melones Dam and Reservoir operations and Lower Stanislaus River flows below Goodwin Dam	U.S. Army Corps of Engineers Flood Control Manual, Flood Control Diagram (New Melones and Tulloch) Oakdale Irrigation District, South San Joaquin Irrigation District contract (Tri-dams Agreement for afterbay storage) New Melones Interim Plan of Operation (includes Anadromous Fish Restoration Program flows with Section 3406(b)(2) water) 1988 Oakdale Irrigation District, South San Joaquin Irrigation District Agreement and Stipulation (release of annual inflows for diversion) State Board D-1422 (release of 98,000 acre-feet for fish and wildlife purposes, dissolved oxygen standards at Ripon) 1987 CDFG Agreement (increased flows over State Board D-1422) 1995 WQCP (minimum dissolved oxygen concentration) 1999 San Joaquin River Agreement flows and water supplies CVP Water Service Contracts
Support of San Joaquin River requirements and objectives at Vernalis	State Board D-1641 (Vernalis flow requirements February-June, Vernalis water quality objectives, San Joaquin River Agreement implementation) CALFED Record of Decision Regulatory Baseline (2:1 flow/export ratio met with Section 3406(b)(2), EWA)

**Table 1-1  
OCAP Actions and Guiding Requirements**

Action	Requirement for Action
<b>VI. Delta Division</b>	
Tracy Pumping Plant Pumping curtailments supported with Section 3406(b)(2) or EWA assets	Salmon Decision Tree CVPIA CALFED Record of Decision and EWA Operating Principles
Delta Cross Channel operation	State Board D-1641 (Delta Cross Channel closure: February-May, 14 days between May 21-June 15, 45 days between November-January Salmon Decision Tree
Contra Costa Canal operations	CVPIA (Fish Screen Program) 1993 Winter-run Chinook Salmon Biological Opinion for Los Vaqueros 1993 Delta Smelt Biological Opinion for Los Vaqueros (requires Old River diversions January-August to the extent possible, diversion reduced during dry conditions, reservoir refilling criteria, reservoir releases in spring)
Export/Inflow ratio	State Board D-1641
X2	State Board D-1641
31-day export limit (Mid-April-Mid-May)	San Joaquin River Agreement-VAMP State Board D-1641
Delta outflow	State Board D-1641 (minimum outflow July-January: 3,000 to 8,000 cfs, habitat protection outflow February-June: 7,100 to 29,200 cfs, February Salinity Starting Condition Determination
Water quality	State Board D-1641 (M&I standards, agricultural standards for western/interior Delta and southern Delta, fish and wildlife standards for San Joaquin River and Suisun Marsh)
JPOD	State Board D-1641
Intertie	CALFED Record of Decision
<b>VII. Friant Division</b>	
Millerton Lake and Friant Dam operations, Friant-Kern Canal operations, and Madera Canal Operations	U.S. Army Corps of Engineers Flood Control Diagram, Mammoth Pool Operating Contract (with Southern California Edison, Water Deliveries [Class I, Class II, and Section 215 supply], SJRWR [flow at Gravelly Ford], Miller and Lux Water Rights exchange)
<b>VIII. West San Joaquin Division</b>	
San Luis Reservoir, Gianelli Pumping and Generating Plant, San Luis Canal, O'Neill Forebay operations, and Dos Amigos Pumping Plant	1961 DWR/Reclamation agreement (as amended) CVP water service contracts and deliveries
<b>IX. San Felipe Division</b>	
Pacheco Pumping Plant, Santa Clara Pipeline, Hollister Conduit, and Coyote Pumping Plant	CVP water service contract and deliveries for Santa Clara Valley Water District and San Benito County
<b>X. Other</b>	
Actions using Section 3406(b)(1), (b)(2)	CVPIA Anadromous Fish Restoration Program 2003 Final Decision on Section 3406(b)(2) Implementation

**Table 1-1  
OCAP Actions and Guiding Requirements**

Action	Requirement for Action
EWA	CALFED Record of Decision and Programmatic Biological Opinions EWA Operating Principles CVPIA

- Reclamation and DWR are also proposing adjustments in the coordinated operation of the CVP and SWP for conveyance of up to 100,000 acre-feet of Level 2 CVP refuge water at Banks Pumping Plant and use of up to 75,000 acre-feet of CVP water to reduce SWP in-basin Bay-Delta water quality and flow requirements. These increases (from current levels of 50,000 acre-feet and 37,500 acre-feet, respectively) would become effective when increasing the permitted capacity of the SWP Banks Pumping Plant to 8,500 cubic feet per second (cfs) has been achieved, or earlier if agreed to by Reclamation and DWR.
- The Freeport Regional Water Project (FRWP).
- Provision of earlier, higher water allocations to CVP water users by developing and implementing a plan (which may consist of source-shifting strategies) to maintain the minimum storage in the state share of San Luis Reservoir.

To facilitate SWP–CVP integration, DWR and Reclamation will develop and obtain State Board approvals of any needed water level, water quality, and fisheries response plans set forth in D-1641.

The OCAP Endangered Species Act consultation primarily addresses ongoing and historic CVP and SWP operations and several future changes. Reclamation formally consulted on several new actions, such as the Freeport diversion project, the M&I shortage policy, the Trinity River Record of Decision flows, and the Delta-Mendota Canal/California Aqueduct Intertie. There was also early consultation (on actions that are not anticipated to be implemented in the immediate future) on the operation of South Delta Improvement Project (the increase to 8,500 cfs at Banks Pumping Plant and South Delta barrier operations) with assumptions for a long-term EWA. Additional consultation under the Endangered Species Act will be required prior to implementing any actions addressed in the early consultation.

The OCAP consultation is not a decision-making process. In essence, it analyzes the effects of proposed operations on listed species. Decisions on implementing new actions are made in separate project-specific planning and environmental compliance processes.

**JOINT POINT OF DIVERSION**

D-1641 granted Reclamation and DWR the ability to use or exchange each other's diversion capacity capabilities to enhance the beneficial uses of both the CVP and SWP. The State Board conditioned the use of JPOD capabilities based on staged implementation and conditional requirements for each stage of implementation. The stages of the JPOD in D-1641 are:

- Stage 1 – water service to Cross Valley Canal contractors and Musco Olive, and to recover export reductions taken to benefit fish.
- Stage 2 – for any purpose authorized under the current project water right permits.
- Stage 3 – for any purpose authorized up to the physical capacity of the diversion facilities.

Each stage of the JPOD has regulatory terms and conditions that must be satisfied in order to implement the JPOD.

All stages require a response plan to ensure that water levels in the southern Delta will not be lowered to the injury of water users in the southern Delta (Water Level Response Plan). All stages require a response plan to ensure that the water quality in the southern and central Delta will not be significantly degraded through operations of the JPOD to the injury of water users in the southern and central Delta.

Stage 2 has the additional requirement to complete an operations plan to protect fish and wildlife and other legal users of water. This is commonly known as the Fisheries Response Plan. Stage 3 has the additional requirement to protect water levels in the southern Delta under the operational conditions of the permanent South Delta Barrier program and an updated companion Fisheries Response Plan.

Reclamation and DWR intend to apply all the response plan criteria consistently for JPOD uses as well as water transfer uses.

The priority access to project facilities has been addressed in the CALFED EWA protocols. The Stage 2 CVP JPOD has the same priority of use of excess Banks Pumping Plant capacity as the EWA program. Article 55 of SWP contracts gives the SWP contractors preferential use of excess Banks Pumping Plant capacity. Reclamation, in approving water transfers involving water from CVP water sources, including those that use SWP Article 55, will consider the potential effects on use of the JPOD to move CVP reservoir storage releases.

In general, the JPOD capabilities will be used to accomplish four basic CVP–SWP objectives:

- When wintertime excess pumping capacity becomes available during Delta excess conditions and total CVP–SWP San Luis Reservoir storage is not projected to fill before the VAMP period, the project with the deficit in San Luis Reservoir storage may use the JPOD capabilities. Concurrently, under the CALFED Record of Decision, the JPOD may be used to create additional water supplies for the EWA or reduce debt for previous EWA actions.
- When summertime pumping capacity is available at Banks Pumping Plant and CVP reservoir conditions can support additional releases, the CVP may use the JPOD capabilities to enhance its annual south-of-Delta water supplies.
- When summertime pumping capacity is available at Banks or Tracy Pumping Plant to facilitate water transfers, the JPOD may be used to further facilitate the water transfer.
- During certain coordinated CVP–SWP operation scenarios for fishery entrainment management, the JPOD may be used to maximize CVP–SWP exports at the facility with the least fishery entrainment impact, while minimizing export at the facility with the most fishery entrainment impact.

### **FREPORT REGIONAL WATER PROJECT**

Reclamation and the Freeport Regional Water Authority (FRWA) are proposing to construct and operate the FRWP, a water supply project to meet regional water supply needs. FRWA, a joint powers agency formed under State law by the Sacramento County Water Agency (SCWA) and East Bay Municipal Utilities District (EBMUD), is the state lead agency, and Reclamation is the federal lead agency.

Reclamation proposes to deliver CVP water, pursuant to its respective water supply contracts with SCWA and EBMUD through the FRWP, to areas in central Sacramento County. The FRWP will have a design capacity of 286 cfs (185 millions of gallons per day [mgd]). Up to 132 cfs (85 mgd) would be diverted under Sacramento County's Reclamation water service contract and other anticipated water entitlements, and up to 155 cfs (100 mgd) of water could be diverted under EBMUD's amended Reclamation water service contract. Under the terms of this amendatory contract, EBMUD can take delivery of Sacramento River water in any year in which EMBUD's March 1 forecast of its October 1 total system storage is less than 500,000 acre-feet. When this condition is met, the amendatory contract entitles EBMUD to take up to 133,000 acre-feet in any three-

consecutive-year period in which its October 1 storage forecast remains below 500,000 acre-feet. EBMUD would take delivery of its entitlement at a maximum rate of 100 mgd (112,000 acre-feet per year). Deliveries would start at the beginning of the CVP contract year (March 1) or any time afterward. Deliveries would cease when EBMUD's CVP allocation for that year is reached, when the 165,000 acre-feet limitation is reached, or when EBMUD no longer needs the water (whichever comes first). Average annual deliveries to EBMUD are approximately 23,000 acre-feet. The maximum delivery in any one water year is approximately 99,000 acre-feet.

Several agreements modify the location of CVP deliveries, while the total quantities delivered remain unchanged. In normal and wet years, Delta inflow would be reduced by 3,200 acre-feet, or an average reduction of 4 cfs. During normal and wet years, Sacramento River flow nearly always exceeds 14,000 cfs, and the anticipated average change would be less than 0.03 percent. Delta diversions would be reduced by an identical amount, offsetting the minor change in flow. In the first year of a drought, inflow to the Delta would be increased by a nearly identical amount, and this increase would be offset by an identical increase in Delta pumping, resulting in no substantial change. In the second year of a drought, Delta inflow may be decreased by as much as 13 cfs on the average. This decrease (0.1 percent) remains minor compared to the typical flows of 10,000 cfs in the Sacramento River and is offset by decreased pumping in the Delta.

#### **SAN JOAQUIN RIVER AGREEMENT/VERNALIS ADAPTIVE MANAGEMENT PLAN**

Adopted by the State Board in D-1641, the San Joaquin River Agreement includes a 12-year experimental program providing for flows and exports in the lower San Joaquin River during a 31-day pulse flow period during April and May. It also provides for the collection of experimental data during that time to further the understanding of the effects of flows, exports, and the barrier at the Head of Old River (HORB) on salmon survival. This experimental program is commonly referred to as the VAMP.

To assist the outmigration of juvenile salmon from the San Joaquin River's eastside tributaries from mid-April through mid-May, the operators of the water projects located on the eastside tributaries manage reservoir releases to provide target flows in the San Joaquin River at Vernalis. At the same time, the HORB is closed so that the San Joaquin River flow at Vernalis primarily passes through the Sacramento River Deep Water Ship Channel rather than into the South Delta. The HORB culverts allow sufficient San Joaquin River water to pass into the South Delta to protect South Delta channel water levels.

The parties to the San Joaquin River Agreement include several agencies that contribute flow to the San Joaquin River, divert from or store water on the tributaries to the San Joaquin River, or have an element of control over the flows on the lower San Joaquin

River. These include Reclamation, the San Joaquin River Exchange Contractors, and the Oakdale, South San Joaquin, Modesto, Turlock, and Merced Irrigation Districts. The VAMP is based on coordination among these participating agencies in carrying out their operations to meet a steady target flow objective at Vernalis.

The target flow at Vernalis for the spring pulse flow period is determined each year according to the specifications contained in the San Joaquin River Agreement. The target flow is determined prior to the spring pulse flows as an increase above the existing flows and so “adapts” to the previous hydrologic conditions. Possible target flows specified in the agreement are 2,000 cfs, 3,200 cfs, 4,450 cfs, 5,700 cfs, and 7,000 cfs.

The Hydrology Group develops forecasts of flow at Vernalis, determines the appropriate target flow, devises an operations plan including flow schedules for each contributing agency, coordinates implementation of the VAMP flows, monitors conditions that may affect the objective of meeting the target flow, updates and adjusts the planned flow contributions as needed, and accounts for the flow contributions. The Hydrology Group includes designees with technical expertise from each agency that contributes water to the VAMP. During VAMP, the Hydrology Group communicates through regular conference calls and shares current information and forecasts by e-mail and an Internet website.

The VAMP program has two distinct components, a flow objective and an export restriction. The flow objectives were designed to provide similar protection to those defined in the 1995 Bay-Delta Plan. Fishery releases on the Stanislaus River above those called for in the 1987 CDFG Agreement are typically considered Section 3406(b)(2) releases. The export reduction involves a combined state and federal pumping limitation on the Delta pumps. The combined export targets for the 31 days of VAMP are specified in the San Joaquin River Agreement: 1,500 cfs (when target flows are 2,000 cfs, 3,200 cfs, 4,450 cfs, or 7,000 cfs), and 2,250 cfs (when target flow is 5,700 cfs, or 3,000 cfs [alternate export target when flow target is 7,000 cfs]).

During the 2003 VAMP, the state and federal projects averaged 1,446 cfs, substantially below the normal combined export pumping by the state and federal projects of from 10,000 to 14,000 cfs. The greatly reduced export pumping during VAMP operations is designed to reduce the influence of the state and federal export projects on the resources of the South Delta.

#### **THE TRACY FISH FACILITY IMPROVEMENT PROGRAM**

The Tracy Fish Collection Facility (TFCF) was developed and built by Reclamation with interagency cooperation in the 1950s as part of the CVP. Its purpose is to protect fish entering the Delta-Mendota Canal by way of the Tracy Pumping Plant. The Tracy Fish

Facility Improvement Program began in 1989 with the overall goal of improving fish protection and fish salvage at the TFCF and is a cooperative effort between Reclamation's Mid-Pacific Region and the Denver Technical Service Center, enhanced through cooperation, review and assistance from other agencies including the CDFG, DWR, the Service, and NOAA Fisheries. Universities, private consultants, and the San Luis and Delta-Mendota Water Authority also assist.

The TFCF uses behavioral barriers consisting of primary and secondary louvers to guide targeted fish into holding tanks before transport by hauling truck to release sites within the Delta. The CVP uses two release sites, one on the Sacramento River near Horseshoe Bend and the other on the San Joaquin River immediately upstream of the Antioch bridge.

When compatible with export operations and technically feasible, facility louvers are operated with the objective of achieving water approach velocities for striped bass and for salmon. Channel velocity criteria are a function of bypass ratios through the facility. Further improvements that are being considered for the TFCF will not threaten current contracted water deliveries through the Tracy Pumping Plant.

#### **SOUTH DELTA IMPROVEMENTS PROGRAM**

DWR and Reclamation are responsible for implementing CALFED's South Delta Improvements Project (DWR 2004). Actions contemplated as part of the program include providing for more reliable long-term export capability by the state and federal water projects, protecting local diversions, and reducing impacts on San Joaquin River salmon. Specifically, the CALFED actions in the South Delta Improvements Program include consideration of the following elements:

- Increase SWP pumping from March 15 to December 15 from the current limit to 8,500 cfs and modify the pumping criteria from December 15 to March 15 to allow greater use of SWP export capacity.
- Increase SWP pumping to the maximum capability of 10,300 cfs.
- Design and construct new fish screens at the Clifton Court Forebay and Tracy Pumping Plant facilities to allow the export facilities to pump at full capacity more regularly.
- Dredge and install operable barriers to ensure water of adequate quantity and quality to agricultural diverters within the South Delta (the fish barrier proposed for the Head of Old River is contained in this element).

DWR has postponed the construction of new fish screen facilities because of uncertainties associated with the design of and funding for the fish screens and the lack of results from fish screen testing facilities at the Tracy Pumping Plant. Without the new fish screen facilities, no new intake into Clifton Court Forebay was proposed. DWR has, therefore, delayed the implementation of increasing SWP diversions to 10,300 cfs.

Reclamation and DWR expect that developing environmental documentation, obtaining permits, and constructing the permanent operable barriers will take until late 2007. In the interim, there may be strategic opportunities during high flow months to increase allowable pumping capability at the SWP Banks Pumping Plant beyond the current operating rules.

In accordance with the CALFED Record of Decision (CALFED 2000), implementation of increased permitted pumping is conditioned upon avoiding adverse impacts to fishery protection and in-Delta water supply reliability. In addition to the CALFED Record of Decision commitments, Reclamation and DWR agree that implementation of increased permitted pumping at the Banks pumping plant is also conditioned on:

- Reclamation and DWR constructing and operating permanent operable barriers in the South Delta to improve water quality and water level conditions and to provide fishery protection.
- Reclamation and DWR, in cooperation with other CALFED agencies and local interests, developing and implementing a comprehensive San Joaquin River Salinity Management Plan to enable reliable compliance with all current Delta water quality salinity objectives (electrical conductivity and chloride) for which the state and federal water projects have responsibility, in accordance with D-1641.
- Construction of the Beale and Byron Tracts aspects of the Old River and Rock Slough water quality improvement projects to protect and improve water quality conditions near the Contra Costa Canal.
- The Service, NOAA Fisheries, and CDFG developing and implementing environmental protection measures (including project-specific and updated programmatic federal biological opinions and state Natural Community Conservation Planning authorization to comply with federal Endangered Species Act and state Natural Community Conservation Planning requirements) that continue to protect and recover covered species to an equivalent level of protection as provided for in the CALFED Record of Decision. The assets needed to provide this level of protection will be adjusted periodically based on new science and other information.

- Reclamation, DWR, the Service, NOAA Fisheries, and CDFG developing and implementing a long-term EWA with appropriate water user and public funding to protect, recover, and restore at-risk native fish species that rely on the Delta, while providing water supply reliability commitments to the SWP and CVP exporters.

### **DELTA-MENDOTA CANAL/CALIFORNIA AQUEDUCT INTERTIE**

As described in the CALFED Record of Decision (CALFED 2000), the goal of the Delta-Mendota Canal/California Aqueduct Intertie (Intertie) is to provide operational flexibility and improve water supply reliability of the CVP and the SWP. The project involves construction and operation of a pumping plant and pipeline between the Delta-Mendota Canal and the California Aqueduct at milepost 7.2 on the Delta-Mendota Canal, where the two projects are 500 feet apart. The project is designed to enable the CVP to use the full capacity of the Tracy Pumping Plant (presently operated to a maximum of 4,600 cfs). The agencies involved will develop cooperative operation of the Intertie.

The Intertie would be used to achieve multiple benefits, including meeting current water supply demands, allowing the CVP Delta export and conveyance facilities to be maintained and repaired, and providing operational flexibility to respond to emergencies. The Intertie would allow flow in both directions, which would provide additional flexibility to both CVP and SWP operations. The Intertie includes a 400 cfs pumping plant at the Delta-Mendota Canal that would allow water to be pumped from the Delta-Mendota Canal to the California Aqueduct. A flow of up to 950 cfs could be conveyed by gravity from the California Aqueduct to the Delta-Mendota Canal.

The Intertie will be owned by Reclamation but operated by the San Luis and Delta-Mendota Water Authority. A three-way agreement among Reclamation, DWR, and the San Luis and Delta-Mendota Water Authority would identify the responsibilities and procedures for operating the Intertie. Reclamation would obtain a permanent easement where the Intertie alignment crossed state property.

The Intertie provides operational flexibility between the Delta-Mendota Canal and California Aqueduct. It would not result in any changes to authorized pumping capacity at the Tracy or Banks Pumping Plant. The Intertie would be used under three different scenarios:

- Up to 400 cfs would be pumped from the Delta-Mendota Canal to the California Aqueduct to help meet water supply demands of CVP contractors. This would allow Tracy Pumping Plant to pump to its authorized capacity of 4,600 cfs, subject to all applicable export pumping restrictions for water quality and fishery protections.

- Up to 400 cfs would be pumped from the Delta-Mendota Canal to the California Aqueduct to minimize impacts to water deliveries because of emergency shutdowns or to reductions in water levels required by system maintenance on the lower Delta-Mendota Canal (south of the Intertie) or the upper California Aqueduct (north of the Intertie) for system maintenance or due to an emergency shutdown.
- Up to 950 cfs would be conveyed by gravity from the California Aqueduct to the Delta-Mendota Canal to minimize impacts to water deliveries because of emergency shutdowns or to reductions in water levels required by system maintenance on the lower California Aqueduct (south of the Intertie) or the upper Delta-Mendota Canal (north of the Intertie).

Water conveyed at the Intertie under these three scenarios could include pumping of CVP water at Banks Pumping Plant or SWP water at Tracy Pumping Plant through use of a JPOD.

To help meet water supply demands of the CVP contractors, operation of the Intertie would allow the Tracy Pumping Plant to pump to its full capacity of 4,600 cfs, subject to all applicable export pumping restrictions for water quality and fishery protections. When in use, water within the Delta-Mendota Canal would be transferred to the California Aqueduct via the Intertie. Water diverted through the Intertie would be conveyed through the California Aqueduct to O'Neill Forebay.

### **CONFORMED PLACE OF USE**

On July 29, 1986, the State Board gave notice of a petition to change 16 of Reclamation's water right permits. The petition sought to:

- Conform the purposes of use in the permits.
- Consolidate the authorized places of use in the permits so that water from each of the CVP facilities may be delivered consistent with current integrated operations.
- Increase the authorized place of use depicted in the individual permits by including encroachment lands and expansion lands. Encroachment lands are lands within the CVP contractor service areas that have already received CVP water but are located outside the authorized CVP Place of Use. Expansion lands are lands within the CVP contractor service areas that have never received CVP water but are entitled to service pursuant to current water service contracts with Reclamation.

The Final Conformed Place of Use EIR was released to the public on November 15, 1999, and does not identify any new significant impacts. The modeling for the PEIS assumed that the process will be completed by 2025 and will include lands currently receiving CVP water.

## **WATER TRANSFERS**

California water law and the CVPIA promote water transfers as important water resource management measures to address water shortages, provided certain protections to source areas and users are incorporated into the water transfer. Water transferees generally acquire water from sellers who have surplus reservoir storage water, sellers who can pump groundwater instead of using surface water, or sellers who will idle crops or substitute a crop that uses less water in order to reduce normal consumptive use of surface diversions.

Water transfers that are relevant to this analysis occur when a water right holder within the Delta or Sacramento-San Joaquin watershed undertakes actions to make water available for transfer by export from the Delta. Transfers requiring export from the Delta are done at times when pumping and conveyance capacities at the CVP or SWP export facilities are available to move the water. Additionally, operations to accomplish these transfers must be carried out in coordination with CVP and SWP operations, such that project purposes and objectives are not diminished or limited in any way.

In particular, parties to the transfer are responsible for providing for any incremental changes in flows required to protect Delta water quality standards. Reclamation and DWR will work to facilitate transfers and will complete them in accordance with all current regulations and requirements. This decision does not address the upstream operations that may be required to produce water for transfer.

The CVP and SWP may provide Delta export pumping for transfers, using available surplus capacity, up to the physical maximums of the pumps, consistent with prevailing operations constraints such as the export/import ratio, conveyance or storage capacity, and the protective criteria that may apply as conditions on such transfers. For example, pumping for transfers may have conditions for protection of Delta water levels, water quality, or fish.

The surplus capacity available for transfers will vary a great deal with hydrologic conditions. In general, as hydrologic conditions become wetter, surplus capacity diminishes because the CVP and SWP are more fully using export-pumping capacity for project supplies. The CVP has little surplus capacity, except in the drier hydrologic conditions. The SWP has the most surplus capacity in critical and some dry years, less or sometimes none in a broad middle range of hydrologic conditions, and some surplus again

in above normal and wet years, when demands may be lower because contractors have alternative supplies.

The availability of water for transfer and the demand for transfer water may also vary with hydrologic conditions. Accordingly, since many transfers are negotiated between willing buyers and sellers under prevailing market conditions, the price of water may also be a factor that determines how much water is transferred in any year. This document does not attempt to identify how much of the available and usable surplus export capacity of the CVP and the SWP will actually be used for transfers in a particular year, but recent history, the expectations for the EWA, and the needs of other transfer programs suggest a growing reliance on transfers.

The majority of transfers would likely occur during July through September and would increase Delta exports from 200,000 to 600,000 acre-feet in most years, after the 8,500 cfs capacity at Banks Pumping Plant is operational. Such future transfers would occur within the 8,500 cfs capacity at Banks Pumping Plant, and the 4,600 cfs capacity at Tracy Pumping Plant described in this document, and in no case would transfers require higher rates of pumping than those. The range of 200,000 to 600,000 acre-feet describes the surplus export capacity estimated to be available in July through September (primarily at Banks Pumping Plant) in about 80 percent of years when the 8,500 cfs capacity at Banks Pumping Plant is in place.

Under these conditions, transfer capability will often be capacity-limited. In the other 20 percent of years (which are critical and some dry years), both Banks and Tracy Pumping Plants have more surplus capacity, so capacity most likely is not limited to transfers. Rather, either supply or demand for transfers may be a limiting factor. In some dry and critical years, water transfers may range as high as 800,000 to 1,000,000 acre-feet depending on the severity of the water supply situation, cross-Delta capacity, and available supplies upstream.

During dry or critical years, low project exports and high demand for water supply could make it possible to transfer larger amounts of water. Low project exports in other months may also make it advantageous to expand the “normal transfer” season. Transfers outside the typical July through September season may be implemented when transferors provide water on a “fish-friendly” pattern. Real-time operations would be implemented as needed to avoid increased incidental take of listed species.

Reclamation and DWR coordinate the implementation of transfers through the CVPIA Section 3406(b)(2) Implementation Team, the Environmental Water Act Team, and the Water Operations Management Team to ensure that the required changes in upstream

flows and Delta exports do not disrupt planned fish protection actions. Reclamation and DWR will continue to use these groups for routine coordination of operations and transfers during the July through September season. Reclamation and DWR will also use these groups to help evaluate proposed transfers that would expand the transfer season or involve transfers in amounts significantly greater than the typical range anticipated by this project description, i.e., 200,000 to 600,000 acre-feet per year.

Although supply, demand, and price of water may at times be limiting factors, it would not be unreasonable to assume that in many years, all the available CVP and SWP capacity to facilitate transfers will be used.

### **NORTH-OF-DELTA OFFSTREAM STORAGE PROJECT**

DWR, Reclamation, and their local partners are studying a proposal to develop offstream storage north of the Delta. The investigation includes Sites Reservoir and alternatives. Sites Reservoir would be located about 70 miles northwest of Sacramento in Antelope Valley and would store up to 1.8 million acre-feet of water.

The objective for the North-of-the-Delta Offstream Storage project specified in the CALFED Record of Decision (CALFED 2000) is to enhance water management flexibility in the Sacramento Valley. By reducing water diversions from the Sacramento River during critical fish migration periods, this project can greatly increase the reliability of supplies for a significant portion of the Sacramento Valley. It can also provide storage and operational benefits for other CALFED programs including Delta water quality and the EWA.

Potential benefits of the North-of-the-Delta Offstream Storage project include the following:

- Improve water supply reliability for local agricultural service contractors.
- Improve water supply reliability for Sacramento Valley refuges.
- Provide water for rice decomposition in Sacramento Valley.
- Improve water supply reliability for CVP and SWP contractors south of the Delta.
- Improve Delta water quality.
- Reduce diversions from the Sacramento River during critical fish migration periods.

- Provide water and storage for CALFED's EWA.
- Provide water for CALFED's Ecosystem Restoration Program objectives.

The Glenn-Colusa Irrigation District, Tehama-Colusa Canal Authority, CDFG, the Service, DWR, and Reclamation are working with other local water agencies and other state and federal agencies on this project.

A draft feasibility study and draft environmental documentation for the North of the Delta Offstream Storage project are scheduled for completion in 2006.

### **GRASSLANDS BYPASS PROJECT**

Historically, farmers in the Grasslands area of the western San Joaquin Valley have discharged subsurface agricultural drain water through wetland channels in the San Luis National Wildlife Refuge complex to the San Joaquin River. This drainage contains elevated concentrations of selenium, salt, boron, and other trace elements.

Bypassing 90 miles of wetland channels, a portion of the San Luis Drain was reopened in September 1996 as the Grasslands Bypass Project (GBP). The San Luis Drain has been modified to allow discharge through six miles of Mud Slough, a natural waterway that traverses the San Luis National Wildlife Refuge Complex and a section of the North Grassland Wildlife Area.

Administered by the San Luis and Delta-Mendota Water Authority, the GBP serves approximately 97,000 acres in the Grassland Drainage Area (GDA). The GBP serves approximately 16,500 acres within DMC Unit contractors, including Broadview Water District, Eagle Field Water District, Oro Loma Water District, Mercy Springs Water District, and Widren Water District, as well as 28,000 acres in portions of Firebaugh Canal Water District and Central California Irrigation District, and 5,500 acres that are outside any organized district. The balance of the area served is in the San Luis Unit.

Since October 1996, subsurface agricultural drainage water produced in the 97,000-acre GDA has been collected and routed into the San Luis Drain pursuant to the Use Agreement Between the United States and the San Luis and Delta-Mendota Water Authority. From the San Luis Drain, the subsurface drainage water is discharged into Mud Slough (north), a tributary of the San Joaquin River upstream of the Merced River.

Under the terms of the use agreement as well as under waste discharge requirements issued by the Regional Water Quality Control Board (Regional Board), a substantial reduction in drainage discharges is required in order to meet load targets for selenium and salinity.

Phase I of the GBP occurred between October 1996 and September 2001. Phase II began in October 2001 and will continue through December 31, 2009. Reclamation and the San Luis and Delta-Mendota Water Authority prepared an environmental impact statement/ environmental impact report that examined the environmental effects of the Phase II use agreement. The waste discharge requirement from the Regional Board were adopted on September 7, 2001 (Order No. 5-01-234). A Biological Opinion was issued for Phase II of the GBP on September 28, 2001 (Service 2001e).

In addition to concentration-based standards, monthly and annual selenium load allocations (pounds of selenium) for the GDA have been adopted and incorporated into the WDR and the GBP use agreement.

Farmers in the GDA formed a regional drainage entity, employed a drainage coordinator, adopted tiered water pricing, adopted a rule for internal selenium load allocation and trades, implemented efforts to improve irrigation efficiency, developed infrastructure to recycle subsurface drainage, and conducted extensive internal monitoring to control and track selenium load discharged from the GDA. The GBP Monitoring Program conducts extensive water quality monitoring of affected receiving waters and is a joint effort of Reclamation, the San Luis and Delta-Mendota Water Authority, the Service, USEPA, U.S. Geological Survey, the Regional Board, and CDFG. Monitoring data are reviewed monthly by the Data Collection and Reporting Team and published by the San Francisco Estuary Institute (Reclamation 2000d). A biological monitoring program is conducted in accordance with a more comprehensive program developed by Reclamation, the Service, U.S. Geological Survey, CDFG, and the Regional Board in conjunction with the project participants.

The waste discharge requirements for the GBP also require a long-term drainage management plan, which has been submitted to the Regional Board and is periodically updated. Furthermore, the GBP EIS included an assessment of the initial phase of an in-valley drainage management project, the San Joaquin River Improvement Project. This project is being developed by Panoche Drainage District for the collection and application of subsurface drainage to salt-tolerant crops and is made available to contractors participating in the GBP to achieve load reduction targets. Subsequent phases of the project will provide a long-term in-valley drainage plan for the land currently participating in the GBP, to be available upon termination of the GBP. Additional environmental reviews will be conducted for future phases of the long-term drainage management actions.

**OTHER RELATED ACTIVITIES AFFECTING SOUTH-OF-DELTA WATER SUPPLY RELIABILITY**

In addition to these related activities, several other projects will have some effect on south-of-Delta deliveries, including, but not limited to, additional Endangered Species Act listings, Mendota Pool transfer pumping operations, conditional waivers of waste discharge requirements for discharges from irrigated lands, and other projects that place additional demands on water originating north of the Delta, the Delta, or those sources of supply that were historically relied upon for south-of-Delta deliveries.