

# RECLAMATION

*Managing Water in the West*

**Draft Environmental Assessment**

## **San Luis Unit Water Service Interim Renewal Contracts – 2008 - 2011**

**EA-07-56**



May 2007

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## **List of Acronyms, Abbreviations and Definition of Terms**

AF or af	acre-feet (the volume of water one foot deep and an acre in area)
BA	Biological Assessment
BO	Biological Opinion
Bp	Before Present
cfs	cubic feet per second
CDFG	California Department of Fish and Game
CVP	Central Valley Project
CVPCP	Central Valley Project Conservation Program
CVPIA	Central Valley Project Improvement Act
DWR	California Department of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
EWA	Environmental Water Account
FWCA	Fish & Wildlife Coordination Act
FWS	Fish and Wildlife Service
IRC	Interim Renewal Contract
ITA	Indian Trust Assets
M&I	Municipal and Industrial
NDDB	Natural Diversity Database
NEPA	National Environmental Policy Act
NHPS	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Registry of Historic Places
OCAP	Operating Criteria and Plan
O&M	Operations and Maintenance
PEIS	Programmatic Environmental Impact Statement
Reclamation	Bureau of Reclamation
ROD	Record of Decision
RRA	Reclamation Reform Act of 1982
SHPO	State Historic Preservation Officer
SWP	State Water Project
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
WWD	Westlands Water District

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# Section 1 Purpose and Need for Action

## 1.1 Background

On October 30, 1992, the President signed into law the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575) that included Title 34, the Central Valley Project Improvement Act (CVPIA). In accordance with and as required by Section 3404(c) of the CVPIA, the Bureau of Reclamation (Reclamation) proposes to execute seven interim renewal contracts beginning January 1, 2008 for Westlands Water District (WWD) and January 1, 2009 for Panoche Water District, San Luis Water District, the California Department of Fish and Game, and the cities of Huron, Coalinga and Avenal. Interim renewal contracts are undertaken under the authority of the CVPIA to provide a bridge between the expiration of the original long-term water service contracts and long-term renewal of those contracts. Each of the seven renewal contracts will be renewed for up to two years and two months (twenty six months). WWD's current long term contract expires December 31, 2007, while the other six contracts expire December 31, 2008. Therefore this Environmental Assessment (EA) analyzes the delivery of Central Valley Project (CVP) water for a two-year and two month period from January 1, 2008 through February 28, 2010 within the service area of WWD and from January 1, 2009 through February 28, 2011 for the other six interim renewal contracts. In the event long-term renewal contracts are executed, the interim renewal contracts then in effect would be superseded by the long-term renewal contracts.

Reclamation has prepared this EA to identify impacts associated with the alternatives and allow Reclamation to determine whether to prepare a FONSI or an EIS. The environmental analysis presented in this EA was developed consistent with regulations and guidance from the Council on Environmental Quality, and in conformance with the court order in *NRDC v. Patterson*, Civ. No. S-88-1658 (Patterson). In *Patterson* the Court found that "...[on] going projects and activities require NEPA [National Environmental Policy Act] procedures only when they undergo changes amounting in themselves to further 'major action'." In addition, the court went further to state that the NEPA statutory requirement applies only to those changes. Based on the environmental documents incorporated into this EA and the analysis within this EA, this EA finds, in large part, that the interim renewal of the contracts is in essence a continuation of the "status quo," that is, the interim renewal of the contracts continues the existing use and allocation of resources (i.e., the same amount of water is being provided to the same lands for existing/ongoing purposes).

Section 3409 of the CVPIA required that Reclamation must prepare a programmatic environmental impact statement (PEIS) before renewing long-term CVP water service contracts. The PEIS analyzed the implementation of all aspects of CVPIA, contract renewal being one of

many programs addressed by this Act. CVPIA Section 3404(c) mandated that upon request all CVP existing contracts be renewed. Implementation of other sections of CVPIA mandated actions and programs that require modification of previous contract articles or new contract articles to be inserted into renewed contracts. These programs include water measurement requirements (Section 3405(b)), water pricing actions (Section 3405(d)), and water conservation (Section 3405(e)). The PEIS did not analyze site specific impacts of contract renewal.

The PEIS evaluated different alternatives of implementing CVPIA's requirements. On January 9, 2001, the Record of Decision was signed approving the implementation of the Preferred Alternative from the Final PEIS, with a few delineated differences, (none of which relate to contract renewal). For the purposes of contract renewal, this was considered basic implementation of the CVPIA. An interim renewal contract form was developed in 1997, (prior to approval of the ROD,) which incorporated the concepts of the Preferred Alternative. This interim renewal contract form is the basis for the No Action Alternative within this document. San Luis Unit specific articles from the existing contract have been added to the interim renewal contract form within the No Action Alternative.

The analysis in the PEIS as it relates to the implementation of CVPIA through contract renewal and the environmental impacts of implementation of the preferred alternative are foundational to this document. The PEIS has analyzed the differences in the environment between existing contract requirements, signed prior to CVPIA, and the No Action Alternative which is reflective of minimum implementation of CVPIA. This document will focus on the environmental impacts of implementation of the two forms of contracts described in the Alternatives section.

Reclamation has not yet completed environmental documentation for proposed long-term contracts within the San Luis Unit (West San Joaquin Division), in part because Reclamation is taking the time necessary to review and incorporate as appropriate information contained in the Record of Decision for the San Luis Drain Feature Re-Evaluation which was released in March, 2007. With the exception of the four existing interim contracts and one long-term contract (which expires in February 2024) listed in Table 1.1 on the following page, water service contracts in the San Luis Unit expire between December 2007 and December 2008. (The four existing interim contracts are previous contract assignments from Delta Mendota Canal (DMC) Unit contracts to entities within the San Luis Unit.) The interim renewal contract of these four existing interim contracts, listed in Table 1.1 on the following page, has been analyzed during the environmental review for the contract assignments and will continue to be reviewed separately. These contracts will be renewed prior to their expiration as interims or as part of long term renewal contract. Reclamation anticipates executing new long-term contracts for the San Luis Unit before the interim renewal contracts expire.



**Table 1.1**  
**Contracts That Allow For The Delivery Of Water Within The Study Area Not**  
**Considered In The Proposed Action**

<b>Contractor/Contract Number</b>	<b>Contract Quantity (af)</b>	<b>Date of Contract Expiration</b>	<b>Reason for Not Being Included</b>
Pacheco Water District 14-06-200-7864A	10,080	2/29/2024	No need for a renewal contract at this time/ contract expires in 2024
Westlands Water District Distribution District No. 1 14-06-200-8018-IR9-B	2,990	2/29/08	This is an assigned DMC contract that is already an interim renewal contract. Note: Past assignment from Widren Water District
Westlands Water District Distribution District No. 1 14-06-200-W0055-IR9-B	2,500	2/29/08	Same as above  Note: Past assignment from Centinella Water District
Westlands Water District Distribution District No. 2 14-06-200-3365A-IR9-C	4,193	2/29/08	Same as above  Note: Past assignment from Mercy Springs Water District
Westlands Water District Distribution District No. 1 14-06-200-8092-IR10	27,000	2/29/08	Same as above  Note: Past assignment from Broadview Water District

## **1.2 Purpose and Need**

The purpose of the proposed action is to execute seven San Luis Unit interim renewal contracts for up to two years and two months (26 months) each, beginning in January 1, 2008 for WWD and January 1, 2009 for the other six interim renewal contractors as required by, and to further implement CVPIA Section 3404(c). Execution of these seven interim renewal contracts will provide the contractual relationship for the continued delivery of CVP water to these contractors pending execution of their long-term renewal contracts.

Interim renewal contracts are needed to provide the mechanism for the continued beneficial use of the water developed and managed by the CVP and for the continued reimbursement to the

federal government for costs related to the construction and operation of the CVP by the seven contractors. Additionally, CVP water is essential to continue agricultural production and municipal viability for these seven contractors.

### **1.3 Scope**

This EA has been prepared to examine the impacts on environmental resources as a result of delivering water to seven San Luis Unit contractors under the proposed interim renewal contracts. The water would be delivered for agricultural or municipal and industrial purposes. The water would be delivered within the current contractor service area boundaries for a period of up to 26 months.

### **1.4 Issues related to CVP Water Use But Not Included As Part of this Analysis**

#### **Contract Service Areas**

No changes to any contractor's service area are included as a part of the alternatives or analyzed within this EA. Reclamation's approval of a request by a contractor to change its existing service area would be a separate discretionary action. Separate appropriate environmental compliance and documentation would be completed before Reclamation approves a land inclusion or exclusion to any San Luis Unit contractor's service area.

#### **Water Transfers and Exchanges**

No sales, transfers, or exchanges of CVP water are included as part of the alternatives or analyzed within this EA. Reclamation's approvals of water sales, transfers, and exchanges are separate discretionary actions requiring separate additional and/or supplementary environmental compliance. Approval of these actions is independent the execution of interim renewal contracts. Pursuant to Section 3405 of the CVPIA, transfers of CVP water require appropriate site-specific environmental compliance. Appropriate site-specific environmental compliance is also required for all CVP water exchanges.

#### **Contract Assignments**

Assignments of CVP contracts are not included as part of the alternatives or analyzed within this EA. Reclamation's approvals of any assignments of CVP contracts are separate, discretionary actions that require their own environmental compliance and documentation. Prior assignments that allow for the delivery of water within the study area were analyzed in previous environmental documents (Reclamation 1999, 2002b, 2003 2003b, 2004d, 2005g, 2007).

## **Warren Act Contracts**

Warren Act contracts between Reclamation and water contractors for the conveyance of non-federal water through federal facilities for the storage of non-federal water in federal facilities are not included as a part of the alternatives or analyzed within this EA. Reclamation's decision to enter into Warren Act contracts are separate actions and independent of the execution of interim renewal contracts. Separate environmental compliance would be occur prior to Reclamation executing Warren Act contracts.

## **Drainage**

This EA acknowledges ongoing trends associated with the continued application of irrigation water and production of drainage related to that water. It does not analyze the effects of Reclamation's providing agricultural drainage service to the San Luis Unit. The provision of drainage has been mandated by the Ninth Circuit Court of Appeals. The provision of drainage service is a separate federal action that has been considered in a separate environmental document (the *San Luis Drainage Feature Reevaluation Final Environmental Impact Statement*) (SLDFRE-FEIS.) Reclamation made a decision for that action which is reflected in the Record of Decision. The actions considered in this EA would not alter or affect the analysis or conclusions in the SLDFRE-FEIS or its Record of Decision (ROD).

## **1.5 Public Involvement**

Public participation requirements for water service, repayment, and other water-related contracts are established in Section 9(f) of the Reclamation Project Act of 1939, 43 U.S.C. Section 485, and by Reclamation Reform Act (RRA) rules and regulation (43 CFR Section 426.22). Public participation procedures are composed of two basic elements: 1) publicize proposed contract actions, and 2) provide an opportunity for public comment. Reclamation provided public notices of and an opportunity to comment on the proposed interim renewal contracts at least 60 days prior to execution of the interim renewal contracts. Reclamation also invited the public to the negotiations of the draft form of the interim renewal contract, and Reclamation made available to the public documents discussed during the negotiations. Negotiations have been completed for the draft form of the 2008/9 interim renewal contracts.

## **1.6 Resources Considered for Potential Effects**

Consistent with previous interim renewal contract EAs for other divisions of the CVP including the 1994 *Interim Renewal Contracts* EA for 67 contractors and the 1998, 2000, 2002, 2004, and 2006 supplemental EAs and with the inclusion of provisions on drainage service and operation and maintenance of certain federal facilities in the San Luis Unit irrigation and M&I form of contract, this EA considers the potential effects of these seven interim renewal contracts on the following resources:

- Water Resources
- Land Use
- Biological Resources
- Cultural Resources
- Recreation Resources
- Environmental Justice
- Indian Trust Assets
- Socio- Economic Resources

## Section 2 Alternatives Including Proposed Action

For purposes of this EA, the following assumptions are made under each alternative:

- A. Execution of each interim renewal contract is considered to be a separate action.
- B. A 26 month interim renewal period is considered in the analysis, though contracts may be renewed for a shorter period.
- C. The contracts will be renewed with existing contract quantities as reflected in Table 2.1 below.
- D. Reclamation would continue to comply with commitments made or requirements imposed by applicable environmental documents, such as existing biological opinions (BOs) including any obligations imposed on Reclamation resulting from reconsultations; and
- E. Reclamation would implement its obligations resulting from Court Orders issued in actions challenging applicable BOs that take effect during the interim renewal period.

**Table 2.1**

**San Luis Unit Contractors, Their Entitlements and the Contract Expiration Dates**

<b>Contractor</b>	<b>Contract Entitlement</b>	<b>Expiration of Long Term Contract</b>	<b>Purpose of Use</b>
California Department of Fish and Game	10 ac-ft	12/31/08	M&I
City of Avenal	3,500 ac-ft	12/31/08	M&I
City of Coalinga	10,000 ac-ft	12/31/08	M&I
City of Huron	3,000 ac-ft	12/31/08	M&I
Panoche Water District	94,000 ac-ft	12/31/08	Ag or M&I
San Luis Water District	125,080 ac-ft	12/31/08	Ag or M&I
Westlands Water District*	900,000 ac-ft	12/31/07	Ag or M&I
Westlands Water District*	250,000 ac-ft	12/31/07	Ag or M&I

Note: \* The two Westland Water District current long term contracts will be combined into one interim renewal contract.

## **2.1 Alternative A – No Action**

The No Action Alternative is the continued delivery of CVP water under the interim renewal of existing contracts which includes terms and conditions required by non-discretionary CVPIA provisions. The No Action Alternative, therefore, consists of the interim renewal of current water service contracts that was considered as part of the Preferred Alternative of the CVPIA PEIS (Reclamation and FWS 1999) adapted to apply for an interim period.

The CVPIA PEIS Preferred Alternative assumed that most contract provisions would be similar to many of the provisions in the 1997 CVP Interim Renewal Contracts, which included contract terms and conditions consistent with applicable CVPIA requirements. In addition, provisions in the existing long term contracts that are specific to the San Luis Unit contracts regarding operation and maintenance of certain facilities and drainage service under the San Luis Act would be incorporated into the No Action Alternative without substantial change.

The general contract provisions of the No Action Alternative are summarized in Table 2.2 as compared to the existing contracts and the Proposed Action. Aspects of the interim renewal contracts that reflect the San Luis Unit specific contract provisions not reflected in the PEIS Preferred Alternative include the following:

### **Federal Drainage Service**

Section 1(a) of the San Luis Act requires the Secretary to provide drainage service to lands within the San Luis Unit. The No Action Alternative form of contract, for those contractors with an irrigation component, would include drainage language similar to the existing contracts updated for existing conditions.

### **O&M of Certain Facilities by the San Luis Unit Contractors**

Each of the San Luis Unit Contractors for which interim renewal contracts are proposed will continue to operate and maintain certain facilities, including turnouts from certain pumping stations on the San Luis Canal, and in the case of WWD, the Coalinga Canal and pumping plant, on terms substantially the same as the existing long-term contracts.

Several applicable CVPIA provisions which were incorporated into the Preferred Alternative of the Final PEIS and which are included in the No Action Alternative are summarized below because they have the potential to result in changes in the environment. These provisions include tiered water pricing, defining M&I water users, requiring water measurement, and requiring water conservation.

### **Tiered Water Pricing**

The CVPIA required the implementation of a tiered water pricing component for contracts with terms longer than three years. The tiered pricing component is the incremental amount to be paid for each acre-foot of water delivered. The tiered pricing component for the amount of water delivered up to 80 percent of the contract total shall not be less than the established rates/charges determined annually by the Contracting Officer in accordance with the then-current applicable Reclamation water rate-setting policies for the contractor. The tiered pricing component for the amount of water delivered in excess of 80 percent of the contract total, but less than or equal to 90 percent of the contract total, shall equal one-half of the difference between the rate/charges established for the contractor and the M&I full cost rate. The tiered pricing component for the amount of water that exceeds 90 percent of the contract total shall equal the difference between (1) the rates/charges and (2) the applicable cost water rate.

### **Water Conservation**

Water Conservation Guidelines implemented under the Reclamation Reform Act of 1982 have been in effect for all applicable CVP contractors. Reclamation policy has required contractors under continuing long-term water service contracts to comply with the Water Conservation Guidelines developed under the CVPIA and to submit water conservation plans if applicable. Water conservation plans are not required for districts that use less than 2,000 af of water or for districts with less than 2,000 irrigable acres. The water conservation assumptions in the No Action Alternative include water conservation actions for municipal and on-farm uses assumed in the California Department of Water Resources' Bulletin 160-93 and the water conservation plans. Such criteria address cost-effective Best Management Practices that are "economical and appropriate," including measurement devices, pricing structures, demand management, public information, and financial incentives. While measurement and pricing structures are required, they are not held to the "economical and appropriate" test.

### **Water Measurement**

The No Action Alternative includes measurement of CVP water deliveries at every turnout or connection. It is assumed that if CVP water is commingled with other sources, including groundwater or other surface water, the measurement devices would report gross water deliveries. Additional calculations would be required to determine the exact quantity of CVP water. However, if groundwater or other surface waters are delivered by other means to the users, the No Action Alternative did not include additional measurement devices except as required by the individual user's water conservation plan.

Additionally since the 1997 interim renewal contracts, which were the basis for the Preferred Alternative in the PEIS, incorporated Reclamation policy, this contract contained a new

definition for M&I Water. The existing long term contracts specified that parcels of less than two acres would be assumed to be M&I. This new definition is also part of the No Action Alternative.

## **M&I Definition**

The definition of M&I will remain the same as that included in the 1997 interim renewal contracts. This definition is: “M&I Water shall mean Project Water, other than Irrigation Water, made available to the Contractor. M&I Water shall include water used for human use and purposed such as water of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to landholdings operated in units of less than five acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to any such landholding is a use described in subdivision (m) of this Article.”

In addition, the No Action Alternative includes environmental commitments as described in the BO for the CVPIA PEIS.

## **2.2 Alternative B - Proposed Action**

The Proposed Action is the interim renewal of the seven San Luis Unit contracts for a period not to exceed 26 months, with contract provisions as negotiated between Reclamation and each of the San Luis Unit contractors. Negotiations between Reclamation and each of the San Luis Unit contractors have recently been completed. The negotiated San Luis Unit form draft interim renewal contract can be found in Appendix A. The Proposed Action includes language addressing the O&M of facilities by San Luis Unit Contractors as described in the No Action Alternative as well as water measurement and conservation articles. The Proposed Action also includes the same definition of M&I Water as the No Action Alternative.

Article 16(c) of the interim renewal contracts for irrigation specifies that the Contracting Officer shall notify the Contractor in writing when drainage service becomes available, and provides for the payment of rates for such service after such notice. The M&I contracts do not include drainage language.

As a result, the primary difference between the Proposed Action and the No Action Alternative is that the Proposed Action does not include tiered pricing. Section 3405(d) of the CVPIA does not require tiered pricing to be included in contracts of 3 years or less in duration and negotiations concluded with a form of contract which does not include tiered pricing. Therefore, if during the term of the interim renewal contracts at least 80% of the contract total is delivered in any year, in such year no incremental charges for water in excess of 80% of the contract total will be collected and paid to the Restoration Fund.



As referenced above, Table 2.2 below provides a comparison of many of the terms and conditions of 1) the existing long-term contracts, 2) the No Action Alternative and 3) the Proposed Action.

**Table 2.2**  
**Comparison of Contract Provisions**

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
Explanatory Recitals	Not addressed	Assumes water rights held by CVP from the State Board for use by water service contractors under CVP policies	Same as No Action Alternative
	Not addressed	Assumes that CVP is a significant part of the urban and agricultural water supply of users	Same as No Action Alternative
	Not addressed	Assumes increased use of water rights, need to meet water quality standards and fish protection measures, and other measures constrained use of CVP	Same as No Action Alternative
	Not addressed	Assumes the need for the 3408(j) study	Same as No Action Alternative
	Not addressed	Assumes that loss of water supply reliability would have impact on socioeconomic conditions and change land use	Same as No Action Alternative
	Assumes construction of an interceptor drain	No similar language in recitals	Assumes provision of drainage service

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
<b>Definitions:</b>			
Charges	Not addressed	Charges defined as payments required in addition to Rates	Same as No Action Alternative
Category 1 and Category 2	Not addressed	Tiered Pricing as in PEIS	No Tiered Pricing and No definition of Category 1 and Category 2
Contract Total	Not addressed	Contract Total described as Total Contract	Assumes maximum entitlement
Irrigation	Assumes delivery of water for commercial agricultural production, livestock, incidental domestic uses on tracts of land two acres or more	Assumes delivery of water for commercial agricultural production, livestock, incidental domestic uses	Assumes delivery of water for commercial agricultural production, livestock, incidental domestic uses
Landholder	Not addressed	Landholder described in existing Reclamation Law	Same as No Action Alternative
M&I water	Not addressed as definition – Addressed within an article – Article assumes obtaining a rate for M&I when delivered	Same as existing contract	Assumes provision of water for irrigation of land in units less than or equal to five acres as M&I water unless Contracting Officer is satisfied use is irrigation
Terms of contract – right to use contract	Assumes that contracts may be renewed	Same as Existing Contract	Assumes that contracts will be renewed if Contractor has been compliant with contract

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
	Assumes convertibility of contract to a 9(d) contract same as existing contracts	Same as Existing Contract	Similar to No Action Alternative but preserves positions re convertability to 9(d) contract
Water to be made available and delivered to the contractor	<p>Assumes water availability in accordance with existing conditions</p> <p>Assumes compliance with Biological Opinions and other environmental documents for contracting</p> <p>Assumes that current operating policies strive to minimize impacts to CVP water users</p> <p>Assumes drain built and allows connection of district built drainage facilities</p>	<p>Same as Existing Contract</p> <p>Same as Existing Contract</p> <p>Same as Existing Contract</p> <p>Same as Existing Contract</p>	<p>Similar to No Action Alternative but makes it more explicit that water to be made available is subject to operational constraints</p> <p>Similar to No Action Alternative; Requires contractor to be within legal authority to implement.</p> <p>Same as No Action Alternative</p> <p>Assumes San Luis Drainage Feature Reevaluation (SLDFRE) Record of Decision (ROD) Implementation (WWD only)</p>
Time for delivery of water	Assumes timing and quantities of water based on deliveries recognized under an approved schedule	Same as Existing Contract	Same as No Action Alternative

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
Point of diversion and responsibility for distribution of water	Assumes measurement for each turnout or connection for federal facilities that are used to deliver CVP water as well as other water supplies	Same as Existing Contract	Assumes similar actions as in Existing Contract
Rates and method of payment for water	Assumes Contractor must pay for all water made available under the Contract whether it is all taken or not	Assumes Tiered Pricing is total water quantity; assumes advanced payment for rates for two months; payment only for water taken	Same as No Action Alternative in terms of payment and take or pay, however tiered pricing is not applicable to contracts less than 3 years
Non-interest bearing operation and maintenance deficits	Not addressed	Assumes language from 1997 Interim renewal contracts	Same as No Action Alternative
Sales, transfers, or exchanges of water	Assumes continuation of transfers; rates for transfer are determined by Reclamation policy	Same as Existing Contract	Same as No Action Alternative
Application of payments and adjustments	Assumes credits or refunds	Same as Existing Contract	Similar to No Action Alternative except requires \$1,000 or greater overpayment for refund
Temporary reduction – return flows	Assumes that current operating policies strive to minimize impacts to CVP water users while meeting all CVP obligations	Assumes that the United States has the right to use return flows which escape or is discharged beyond District boundaries	Same as No Action Alternative
Constraints on availability of project water	Assumes that current operating policies strive to minimize impacts to CVP water users while meeting all CVP obligations	Same as Existing Contract	Same as No Action Alternative

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
Unavoidable groundwater percolation	Assumes that some of applied CVP water will percolate to groundwater	Same as Existing Contract	Same as No Action Alternative
Rules and Regulations	Assumes that CVP will operate in accordance with then-existing rules	Same as Existing Contract	Same as No Action Alternative
Water and air pollution control	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Quality of water	Reclamation has no obligation to provide water of a specific quality however the Contractor has no responsibility to accept and pay for water of unacceptable quality	Assumes that CVP will operate in accordance with existing rules.	Same as No Action Alternative
Water acquired by the contractor other than from the United States	Contract allows for exercise of other water rights if no interference with operation of CVP	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Opinions and determinations	Assumes the Contractor expressly reserves the right to relief from any arbitrary, capricious or unreasonable opinion or determination	PEIS recognizes that CVP will operate in accordance with existing rules; opinions will not be arbitrary, capricious or unreasonable	Same as No Action Alternative with additional clarifications on the right to seek relief and legal effect of section
Coordination and cooperation	Not addressed	Not addressed	Assumes that communication coordination and cooperation between CVP operations and users should participate in CVP operational decision making discussions however parties

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
			retain exclusive decision-making authority
Charges for delinquent payments	Penalty imposed for charges or installments of money that remain unpaid after due and payable	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Equal Opportunity	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
General obligation	Assumes charges, taxes or assessments under the contract designated as all lands in the district and obligation to pay the United States	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Compliance with civil rights laws and regulations	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Privacy act compliance	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Contractor to pay certain miscellaneous costs	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Points of Diversion and Responsibility for Distribution of Water	Assumes interceptor drain built and allows for discontinuation of service for maintenance	Assumes drainage service	Assumes no indemnity for United States for lack of drainage service
Transfer of Care for Operation and Maintenance of the San Luis Unit	Allows transference of operation and maintenance of the San Luis Unit to State of California	Same as Existing Contract; Stipulated judgment subsequent to contract issuance provides for contracting with San Luis Contractor for operation and maintenance of certain San Luis Facilities	Same as No Action Alternative

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
Drainage Studies and Facilities	Assumes Contractor groundwater studies and reports. Assumes Districts construction of in-district drainage facilities	Assumes status quo of addressing drainage	Recognizes that the Secretary shall provide drainage service
Water conservation	Not addressed	Assumes compliance with conservation programs established by Reclamation and the State of California	Same as No Action Alternative
Existing or acquired water or water rights	Assumes that CVP will operate in accordance with existing rules	Same as Existing Contract	Same as No Action Alternative
Operation and maintenance by non-federal entity	Assumes that the United States may transfer the O&M and does not affect the rights or obligations of either party to the contract	Assumes that CVP will operate in accordance with existing rules and no additional changes to operation responsibilities	Similar to No Action Alternative however recognizes role of certain operating Non- Federal Entity/Entities
Contingent on appropriation or allotment of funds	The expenditure or advance of any money or performance of any obligation of the United States under this Contract shall be contingent upon appropriation or allotment of funds	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Books, records, and reports	District to keep books, records and report crop and other data	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Assignment limited	No assignment unless approved by the United States	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Severability	Not addressed	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Resolution of disputes	Not addressed	Not addressed	Assumes a Dispute Resolution Process
Officials not to benefit	No Member of or Delegate to Congress, Resident Commissioner or official of the Contractor shall benefit from the contract	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative

<b>Interim Renewal Contract Provision</b>	<b>Existing Contract</b>	<b>No Action Alternative Based on PEIS Preferred Alternative</b>	<b>Proposed Action – Negotiated Contract</b>
	other than a water user or landowner in the same manner as other landowners		
Changes in contractor's service area	Assumes no changes in absent Contracting Officer consent	Assumes no change in CVP water service areas absent Contracting Officer consent	Assumes changes to limit rationale used for non-consent and sets time limit for assumed consent.
Notices	Prescribes process to provide notice	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative
Confirmation of contract	Assumes Court confirmation of contract for assurance relating to validity of contract	Same as Existing Contract	No requirement for court confirmation of contract on contracts of short duration

**Note:** Table 2,2 contains a summary of many but not all of the terms and conditions of the referenced contracts. Also the “Existing Contract” reflected in the above table is based upon WWD’s 1963 Contract No. 14-06-200-495A. Other San Luis Unit existing contracts may have some minor differences however this contract is believed to be representative. Finally, the above table is also generally descriptive of contract provisions within the three predominantly irrigation contract forms however for the precise contract language and an exact comparison, the specific contracts should be referenced.

## 2.3 Alternatives Considered but Eliminated from Further Analysis

### Non-renewal of Contracts

Non-renewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA which states that “...the Secretary shall, upon request renew any existing long-term repayment of water service contract for the delivery of water from the CVP...” (emphasis added). The non-renewal alternative was considered, but eliminated from analysis in this EA because Reclamation has no discretion not to renew existing water service contracts.



## **Reduction in Interim Renewal Contract Water Quantities**

Reduction of contract water quantities due to the current delivery constraints on the CVP system was considered in certain cases, but rejected from this analysis of the seven interim renewal contracts for several reasons:

First, the Reclamation Project Act of 1956 and the Reclamation Project Act of 1963 mandate renewal of existing contract quantities when beneficially used. Irrigation and M&I uses are beneficial uses recognized under federal Reclamation and California law. Reclamation has determined that the contractors have complied with contract terms and the requirements of applicable law. It also has performed water needs assessments for all the CVP contractors to identify the amount of water that could be beneficially used by each water service contractor. In the case of each San Luis Unit contractor, the contractor's water needs equaled or exceeded the current total contract quantity.

Second, the analysis of the PEIS resulted in selection of a Preferred Alternative that required contract renewal for the full contract quantities and took into account the balancing requirements of CVPIA (p. 25, PEIS Record of Decision) (PEIS ROD). The PEIS ROD acknowledged that contract quantities would remain the same while deliveries are expected to be reduced in order to implement the fish, wildlife and habitat restoration goals of the Act, until actions under CVPIA 3408(j) to restore CVP yield are implemented (PEIS ROD, pages 26-27). Therefore, an alternative reducing contract quantities would not be consistent with the PEIS ROD and the balancing requirements of CVPIA.

Third, the shortage provision of the water service contract provides Reclamation with a mechanism for annual adjustments in contract supplies. The provision protects Reclamation from liability from the shortages in water allocations that exist due to drought, other physical constraints, and actions taken to meet legal or regulatory requirements. Reclamation has relied on the shortage provisions to reduce contract allocations to San Luis Unit contractors in most years in order to comply with Section 3406(b)(2) of the CVPIA. Further, CVP operations and contract implementation, including determination of water available for delivery, is subject to the requirements of biological opinions issued under the Federal Endangered Species Act for those purposes. If contractual shortages result because of such requirements, the Contracting Officer has imposed them without liability under the contracts.

Fourth, retaining the full historic water quantities under contract provides the contractors with assurance the water will be made available in wetter years and is necessary to support investments for local storage, water conservation improvements and capital repairs.

Therefore, an alternative reducing contract quantities would not be consistent with Reclamation law or the PEIS ROD, would be unnecessary to achieve the balancing requirements of CVPIA or to implement actions or measure that benefit fish and wildlife, and could impede efficient water use planning in those years when full contract quantities can be delivered.

### **Delivery of Full Contract Quantities/No Shortages**

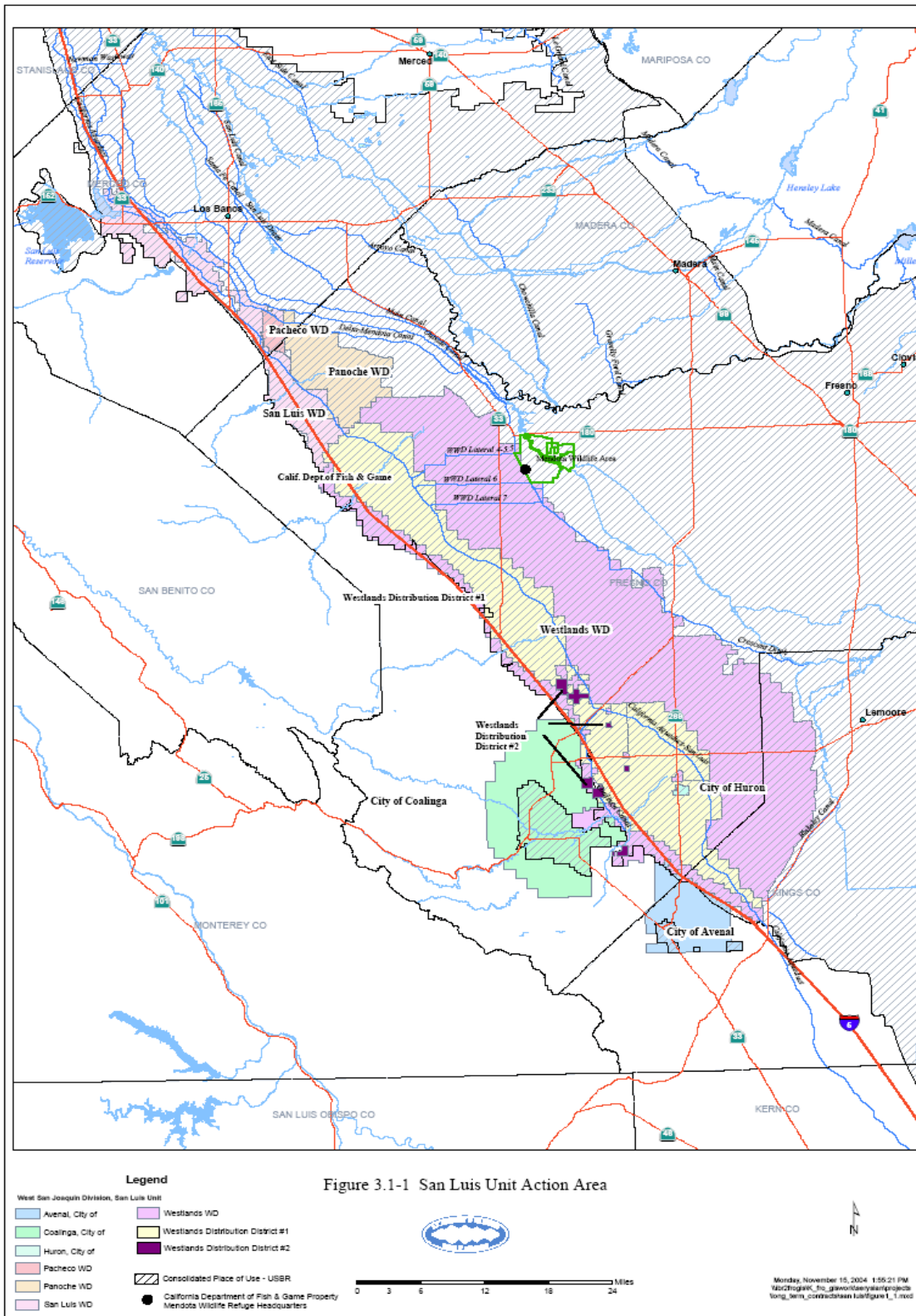
Given the constraints on available CVP supplies analyzed in the PEIS and updated with the CVP OCAP, an alternative that assumes deliveries of 100% contract supplies in every year was not considered. Such an alternative is not legally mandated, and could be achieved, according to the PEIS ROD, only in the future in the event mechanisms to increase CVP yield are implemented through federal legislation, then funded and constructed. The most current analysis of reasonably available deliveries is the CVP OCAP which projects continued constraints for South of Delta CVP contractors through 2030. The interim renewal contracts would not exceed 26 months in length, and therefore, there is no reasonable basis to include a “full contract quantity/no shortages” alternative.

## Section 3 Affected Environment & Environmental Consequences

This section describes the service area for the seven contractors analyzed in this EA that receive Central Valley Project (CVP) water from the Delta-Mendota Canal, the San Luis Canal, and the Mendota Pool and that are part of the San Luis Unit. The study area, shown in Figure 3.1, includes portions of Merced, Fresno, and Kings Counties. Specifically, the study area includes the service areas of the following seven San Luis Unit contractors:

- City of Avenal
- City of Coalinga
- City of Huron
- Panoche Water District
- San Luis Water District
- Westlands Water District
- California Department of Fish and Game (CDFG)

Maps of individual Contractor service area boundaries can be found in Appendix B.



## **3.1 Water Resources**

### **3.1.1 Affected Environment**

#### **Surface Water Resources**

##### ***Central Valley Project Water Supply***

Prior to the CVP, irrigators in the San Joaquin Valley depended primarily on groundwater for agricultural irrigation. As groundwater quantity and quality declined and land subsidence increased, it became apparent that a supplemental source of water was needed for agriculture to continue. The CVP was implemented in part to supply irrigators, primarily in the Central Valley, with a long-term water supply to augment existing groundwater resources.

CVP water is used for the irrigation of agricultural areas, for M&I uses, for the restoration of fisheries and aquatic habitat in the waterways that have been affected by water development, for wildlife refuges, and for other purposes. The largest use of CVP water is for agricultural irrigation. The greatest demand for irrigation water occurs in mid- to late summer, as crops mature and crop water use increases. During the winter, farmers also use water for frost control and pre-irrigation of fields to saturate the upper soil.

Reclamation makes water from the CVP available to contractors for reasonable and beneficial uses, but this water is generally insufficient to meet all of the contractors' needs. In the San Luis Unit service area, contractors without a sufficient CVP water supply may extract groundwater if pumping is feasible or negotiate water transfers with other contractors. Alternative supplies from groundwater pumping and/or transfers are accessed as supply sources when CVP surface water deliveries become more expensive than pumping or transfer costs.

##### ***Water Delivery Criteria***

The amount of CVP water available each year for contractors is based, among other considerations, on the storage of winter precipitation and the control of spring runoff in the Sacramento and San Joaquin River basins. Reclamation's delivery of CVP water diverted from these rivers is determined by state water right permits, judicial decisions, and state and federal obligations to maintain water quality, enhance environmental conditions, and prevent flooding. The CVPIA PEIS considered the effects of those obligations on CVP contractual water deliveries. Experience since completion of the CVPIA PEIS has indicated even more severe contractual shortages applicable to south-of-Delta water deliveries (Reclamation and FWS 1999), and this information has been incorporated into the modeling for the current CVP-State Water Project (SWP) Operating Criteria and Plan (OCAP) (Reclamation and DWR, 2004).

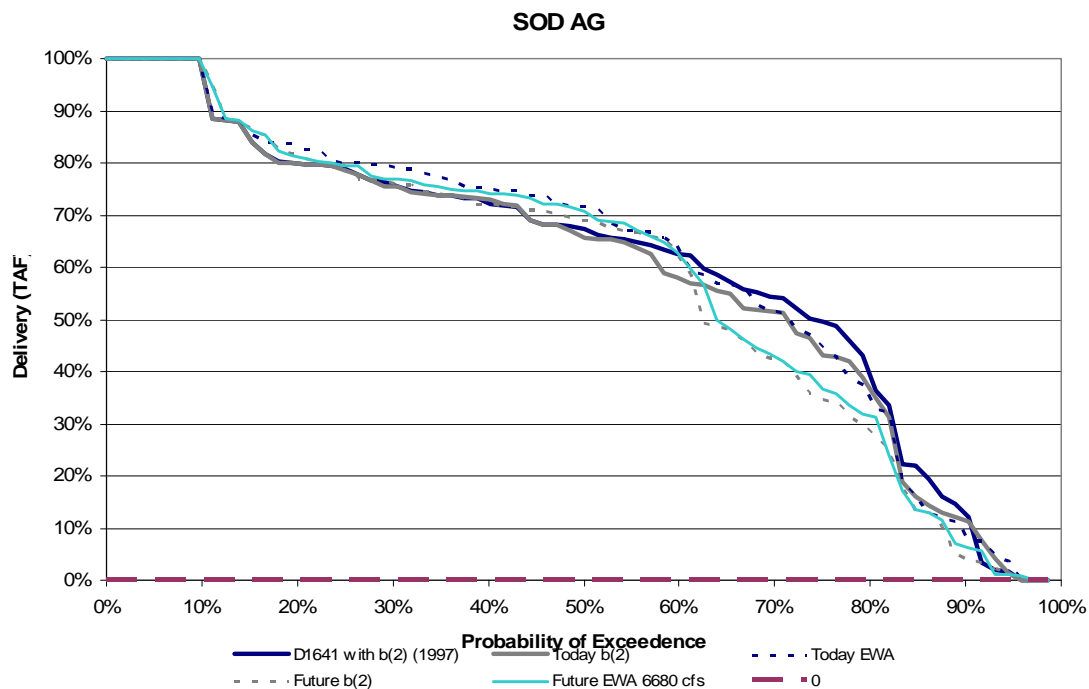
### ***Water Delivery Conditions Under CVPIA Implementation***

With the implementation of the CVPIA PEIS Preferred Alternative and under conditions in the late 1990s, modeling predicts that CVP agricultural water service contractors south of the Delta would receive an average of 59 percent of their current total contract amounts, based upon a hydrologic pattern similar to that of the last 70 years and described in Technical Appendix, Volume 2, of the Draft CVPIA PEIS (Reclamation 1997a). These conditions would result in the delivery of total contract amounts to agricultural water service contractors located south of the Delta approximately 15 percent of the time. Minimum deliveries of zero would occur only in critically dry years.

Tables within the CVP OCAP (Reclamation 2004b) also show that deliveries of over 80% of the contract total for agricultural purposes would occur between 22 and 24 percent of the time. That means modeling predicts that tiered pricing, (if it were required), would apply once every fourth or fifth year.

**Figure 3.1-2**

#### **CVP South of Delta Agricultural Allocation Exceedance Chart**



Source: Reclamation 2004b.

### ***Water Needs Assessment***

During the development of the Water Needs Assessments (See Appendix D), beneficial and efficient future water demands were identified for each contractor. The demands were compared to available non-CVP water supplies to determine the need for CVP water. If the negative amount (unmet demand) is within 10 percent of their total supply for contracts of greater than 15,000 acre-feet (af) per year, or within 25 percent for contracts less than or equal to 15,000 af per year, the test of full future need of the water supplies under the contract was deemed to be met. Because the CVP was initially established as a supplemental water supply for areas with inadequate supplies, the needs for most contractors were at least equal to the CVP water service contract and frequently exceeded the previous contract amount. Increased total contract amounts were not included in the needs assessment because the CVPIA stated that Reclamation cannot increase contract supply quantities. The analysis for the Water Needs Assessment did not consider that the CVP's ability to deliver CVP water has been constrained in recent years and may be constrained in the future because of many factors including hydrologic conditions and implementation of federal and state laws. The likelihood of contractors actually receiving the full contract amount in any given year is uncertain.

As noted above, within the San Luis Unit, even at full contract entitlement and utilization of groundwater, the total water supply falls short of the total water need because the CVP contracts are subject to shortages caused by drought and environmental and regulatory actions such as the CVPIA, the Endangered Species Act, and Bay-Delta water quality actions. Thus, San Luis Unit contractors and individual landowners, when possible, must obtain supplemental water to help make up this deficiency (Reclamation 2004f). For this reason, to meet their annual needs, contractors in the San Luis Unit frequently pump groundwater or obtain water through transfers and exchanges. Many of these transfers are with other San Luis Unit contractors. Overall, San Luis Unit contractors conduct ongoing discussions and enter into transfers frequently to help one another respond to annual deficiencies.

### ***San Luis Unit Facilities***

The San Luis Unit is part of the West San Joaquin Division of the CVP and also part of the State of California Water Plan. The principal federal facilities of the San Luis Unit include four storage dams that form reservoirs with a total active capacity of 2,013,370 af, 115 miles of canals, 1.8 miles of tunnels, 26 pumping plants, 84 miles of drains, two pumping-generating plants, and three substations.

Reclamation constructed this Unit, certain facilities of which are operated jointly by Reclamation and the State of California. Of the joint-use facilities, 55 percent of the total cost is attributed to the State of California and the remaining 45 percent to the United States. The joint-use facilities are O'Neill Dam and Forebay, B.F. Sisk (San Luis) Dam, San Luis Reservoir, William R. Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche

Reservoirs, and San Luis Canal from O'Neill Forebay to Kettleman City, together with the necessary switchyard facilities.

The federal-only facilities that are within the San Luis Unit include the O'Neill Pumping Plant and Intake Canal, Coalinga Canal Pumping Plant, and San Luis Drain. San Luis Reservoir serves as the major storage reservoir and the O'Neill Forebay acts as an equalizing water basin for the upper stage, dual-purpose pumping-generating plant. Pumps located at the base of O'Neill Dam take water from the Delta-Mendota Canal through an intake channel (a federal feature) and discharge it into the O'Neill Forebay. The California Aqueduct (a state feature) flows directly into O'Neill Forebay. The Gianelli pumping-generating units lift the water from the O'Neill Forebay and discharge it into San Luis Reservoir. When not pumping, these units generate electric power by reversing flow through the turbines. Water for irrigation is released into the San Luis Canal and flows by gravity to Dos Amigos Pumping Plant, where it is lifted more than 100 feet to permit gravity flow to its terminus at Kettleman City. During irrigation months, water from the California Aqueduct flows through the O'Neill Forebay into the San Luis Canal instead of being pumped into the San Luis Reservoir. Two detention reservoirs, Los Banos and Little Panoche Reservoirs, control cross drainage along the San Luis Canal. The reservoirs provide recreation and flood control benefits.

Other Delta and South of Delta CVP facilities utilized for providing water to the San Luis Unit consist of the Jones Pumping Plant and the Delta-Mendota Canal, used to pump and convey water to the O'Neill Pumping-Generating Plant, where it is placed in storage in the San Luis Reservoir.

Operation and maintenance activities for facilities utilized to provide CVP water to the San Luis Unit contractors are provided by a non-federal operating entity, the San Luis & Delta-Mendota Water Authority for the Jones and O'Neill plants, Delta-Mendota Canal and portions of the San Luis Drain; by the State of California for the joint use facilities; by WWD for the Coalinga Canal Pumping Plant, a portion of the San Luis Drain and the Westlands canal-side pumping plants; and by San Luis Water District and Panoche Water District for their respective canal-side pumping plants.



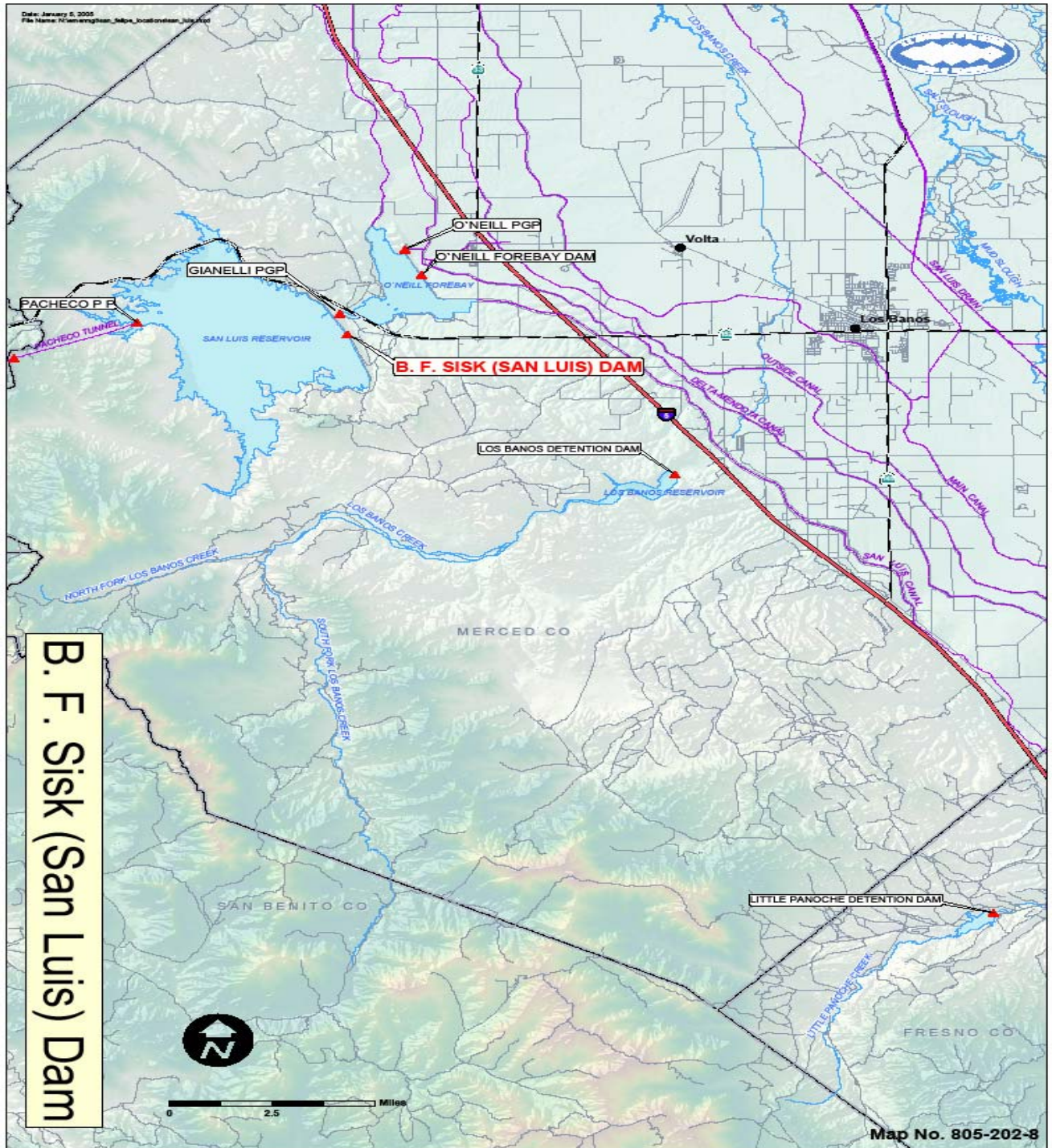


Figure 3.1-3 San Luis Facilities

### ***City of Avenal's Water Use***

On November 20, 1969, the City of Avenal signed a long-term contract (Contract 14-06-200-4619A) with Reclamation for up to 3,500 af of CVP water annually. This contract will remain in effect through December 31, 2008.

The City of Avenal's water supply source is CVP water from the San Luis Canal. All of Avenal's CVP water supply is used for M&I purposes. Under a formal agreement, Avenal supplies Avenal State Prison with 1,411 af of water annually. The City of Avenal also provides water service to the urbanized portions of Avenal and a limited number of connections in the northern portion of the community. Avenal does not pump any groundwater. The poor quality of the groundwater and its high concentrations of sulfate, nitrates, and sodium preclude its use for domestic purposes.

The City of Avenal's water needs analysis completed by Reclamation in July 2000 estimated that there would be an unmet demand of 391 af for 2025. (See Appendix D for the complete Water Needs Assessment.)

### ***City of Coalinga's Water Use***

On October 28, 1968, the City of Coalinga signed a long-term contract (Contract 14-06-200-4173A) with Reclamation for up to 10,000 af of CVP water annually. This contract will remain in effect through December 31, 2008.

The City of Coalinga's sole water supply source is CVP water obtained at a single turnout from the Coalinga Canal, which is fed by the San Luis Canal. Because WWD operates the US owned pipeline, the City of Coalinga pays an operation and maintenance charge to WWD for transporting CVP water to obtain its CVP supply. The City of Coalinga supplies potable water to almost all of the residences within its service area. The current long-term contract required Coalinga to abandon its former source of water supply (i.e., pumping water from groundwater wells) and to depend on its CVP supply as its M&I water supply.

The City of Coalinga's water needs analysis completed by Reclamation in July 2000 estimated that there would be no unmet demand for 2025. (See Appendix D for the complete Water Needs Assessment.)

### ***City of Huron's Water Use***

On September 26, 1972, the City of Huron signed a long-term contract (Contract 14-06-200-7081A) with Reclamation for a maximum of 3,000 af of CVP water annually. This contract will remain in effect through December 31, 2008.

The City of Huron's only water supply is CVP water received from a lateral connection to the San Luis Canal. Water is transported to Huron via Lateral 27, which is operated by WWD. Huron pays WWD O&M costs for transportation of their CVP supply. Huron does not pump groundwater. Groundwater in the area is very deep, of poor quality and almost non-potable.

The City of Huron's water needs analysis completed by Reclamation in July 2000 estimated that there would be no unmet demand for 2025. (See Appendix D for the complete Water Needs Assessment.)

### ***San Luis Water District's Water Use***

#### **Description of District Facilities**

The San Luis Water District's current distribution system consists of 52 miles of pipelines, 10 miles of lined canals, and 7.5 miles of unlined canals. About 18,765 acres within the district, referred to as the Direct Service Area, receive water from 39 turnouts on the Delta-Mendota Canal and 23 turnouts on the San Luis Canal. In addition to the Direct Service Area, three improvement districts are also served through distribution systems branching off the San Luis Canal.

#### **CVP Contracts**

On February 25, 1959, San Luis Water District entered into a long-term contract (Contract 14-06-200-7563) with Reclamation for 93,300 af of CVP supply from the Delta-Mendota Canal. This contract was superseded with a contract executed on June 18, 1974, (Contract 14-06-200-7773A) for a maximum of 125,080 af of CVP supply from the Delta-Mendota and San Luis Canals. This contract was amended in January 13, 1986 (Contract 14-06-200-7773A). The district's long-term contract will expire on December 31, 2008.

San Luis Water District's water needs analysis completed by Reclamation in July 2000 estimated that there would be no unmet demand for 2025. (See Appendix D for the complete Water Needs Assessment.)

#### **Use of Other Available Water Supplies**

CVP water is the San Luis Water District's only long-term water supply. The district does not own any groundwater wells and has no other long-term contracts for surface or groundwater supplies. All of the groundwater wells in the area are privately owned and operated. About 20

private agricultural wells provide water to 6,000 acres in the Direct Service Area. There are no agricultural wells within the three improvement districts. The vast majority of the San Luis Water District's water users do not have meaningful access to groundwater that can be used for irrigation, and therefore, supplementation of the CVP supply is nominal.

Although water deliveries by the San Luis Water District historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The San Luis Water District currently supplies approximately 800 af per year to approximately 1,300 homes and businesses. M&I use demands within the district are expected to increase.

### ***Westlands Water District's Water Use***

#### **Description of District Facilities**

WWD's permanent distribution system consists of 1,034 miles of closed, buried pipeline that conveys CVP water from the San Luis and Coalinga Canals and 7.4 miles of unlined canal that conveys CVP water from the Mendota Pool. The area served by the system encompasses approximately 88 percent of the irrigable land in the district, including all land lying east of the San Luis Canal. The district also operates and maintains the 12-mile-long, concrete-lined Coalinga Canal, the Pleasant Valley Pumping Plant, and the laterals that supply CVP water to Coalinga and Huron. WWD provides water via gravity water service and pumping from the San Luis Canal depending on location.

#### **CVP Contracts**

On June 5, 1963, WWD entered into a long-term contract (Contract 14-06-200-495-A) with Reclamation for 1,008,000 af of CVP supply from the San Luis Canal, Coalinga Canal, and Mendota Pool. In a stipulated agreement dated September 14, 1981, the contractual entitlement to CVP water was increased to 1.15 million af. The long-term contract will expire on December 31, 2007. The first deliveries of CVP water from the San Luis Canal to WWD began in 1968.

In 1999, Reclamation stated that the estimated average long-term supply for WWD was 70 percent of its water supply contract, or about 805,000 af per year. Prior to 1990, its average CVP water supply, including interim CVP water when it was available, was approximately 1,250,000 af per year, and associated groundwater pumping in the district averaged approximately 150,000 af per year. The needs analysis completed by Reclamation in July 2000 estimated that the unmet demand in WWD for 2025 would be approximately 74,287 af per year. (See Appendix D for the complete Water Needs Assessment.)

#### **Use of Other Available Water Supplies**

As noted above, in addition to the CVP supply, groundwater is available to some of the lands within WWD. The safe yield of the aquifer underlying WWD is approximately 200,000 af of

water. WWD supplies groundwater to some district farmers and owns some groundwater wells, with the remaining wells privately owned by water users in WWD. Other water supply sources available to the district for purchase include floodwater diverted from the Mendota Pool in periods of high runoff.

### ***Panoche Water District's Water Use***

#### **Description of District Facilities**

Panoche Water District's conveyance system is composed of approximately 45 miles of canals and pipelines to serve its landowners. Panoche Water District obtains CVP water through two diversion points on the Delta-Mendota Canal and five diversion points on the San Luis Canal.

#### **CVP Contracts**

On August 16, 1955, Panoche Water District entered into a long-term service contract (Contract 14-06-200-7864) with Reclamation for 93,988 af of water per year from the Delta-Mendota Canal. On August 30, 1974, the contract with Reclamation was amended (Contract 14-06-200-7864A) to allow a maximum delivery of 94,000 af of water from either the Delta-Mendota Canal or the San Luis Canal. This contract was further revised on January 13, 1986, and November 14, 1988, in amendatory contracts that revised some contract terms but not the maximum quantity of CVP water to be supplied. The majority of water delivered is used for agricultural purposes. A small amount of CVP water is diverted annually to satisfy domestic needs within the district.

Panoche Water District's water needs analysis completed by Reclamation in July 2000 estimated that there would be no unmet demand for 2025. (See Appendix D for the complete Water Needs Assessment.)

#### **Use of Other Available Water Supplies**

The CVP supply is the Panoche Water District's only long-term water supply. The district does not own or operate any groundwater wells. However, there are 42 privately owned and operated groundwater wells in the district service area. Because of its poor quality, groundwater is only used as a drought contingency water supply source.

#### ***CDFG's Water Use***

The CDFG currently receives 10 af of M&I water for domestic use at the headquarters of the Mendota Waterfowl Management Area.

On January 1, 1976, the CDFG signed a long-term contract (Contract 14-06-200-8033A-LTR1) with Reclamation to supply 10 af of supply for domestic use at the Mendota Waterfowl Management Area headquarters, near the City of Mendota. The CVP supply is the CDFG's only long-term water supply used at this facility.



No water needs assessment was developed for CDFG since the quantity of water was below the threshold requirement.

### ***Surface Water Resources – Natural Watercourses***

San Luis Unit surface waters originate in the western San Joaquin Valley and flow predominantly eastward towards, and contributory to, the San Joaquin River as direct surface flows or as contributions to east-trending groundwater flows. The San Joaquin River provides the major drainage outlet from the San Joaquin Valley. The San Joaquin River flows north along the valley trough and converges with the southerly flowing Sacramento River in the Sacramento-San Joaquin Bay-Delta. From there the water flows through the Suisun Bay and Carquinez Strait into San Francisco Bay and out to the Pacific Ocean. Water supply for purposes other than drinking water is mainly derived from runoff from the mountains and foothills of the Coast Ranges and the Sierra Nevada foothills. The primary use of surface water in the area is for agriculture. Surface water supplies have been developed by local irrigation and water districts, county agencies, private companies, and state and federal agencies.

There are 18 separate named arroyos and creeks originating in the Coast Range that flow westward into and/or across San Luis Unit, but rarely reaching the San Joaquin River. Much of the flow of these arroyos and creeks is intermittent, typically resulting in little or no flow in the late summer and early fall months.

### ***CVP Water Service Contracts***

Reclamation has substantially completed negotiating the provisions of interim renewal contracts with the San Luis Unit contractors. Reclamation recognizes that the capacity to deliver CVP water has been constrained in recent years because of several hydrologic, regulatory, and operational uncertainties, and that these uncertainties may exist or become more constraining in the future as competing demands for water resources intensify. Therefore, the likelihood of contractors receiving the amount of water set out in the draft interim renewal contracts in any given year is uncertain, but likely similar to, or less than levels of historic deliveries.

CVP water service contracts in the San Luis Unit are between the United States and individual water users or districts and provide for an allocated supply of CVP water to be applied for beneficial use. The purposes of a water service contract are to stipulate provisions under which a water supply is provided, to produce revenues sufficient to recover an appropriate share of capital investment, and to pay the annual operation and maintenance costs of the CVP.

Within the San Luis Unit, even at full contract entitlement and utilization of groundwater, the total water supply falls short of the total water need because the CVP contract is subject to shortages caused by drought and environmental and regulatory actions such as the CVPIA, the Endangered Species Act, and Bay-Delta water quality actions. Thus, San Luis Unit contractors and individual landowners, when possible, must obtain supplemental water to help make up this

deficiency (Reclamation 2004f). For this reason, contractors in the San Luis Unit frequently purchase transfer water to meet their annual needs.

## **Groundwater Resources**

The San Joaquin Valley basin has been identified as containing 26 groundwater basins with nine of the basins classified as significant sources of groundwater. The total area of the nine groundwater basins is approximately 13,700 square miles, of which the San Joaquin Valley alone comprises about 13,500 square miles.

Much of the western portion of the San Luis Unit is underlain by the Corcoran clay, which divides the groundwater system into two major aquifers: a confined aquifer below the clay and a semi-confined aquifer above the clay (Williamson et al. 1989). The groundwater aquifers under the San Luis Unit include three zones of water: (1) a semi-confined zone of water of varying quality; (2) a confined zone of water of varying quality; and (3) a saline body of water underlying the confined zone of freshwater (Belitz 1988).

Recharge to the semi-confined upper aquifer generally occurs from stream seepage, deep percolation of rainfall, and subsurface inflow along basin boundaries. As agricultural practices have expanded in the region, recharge has been augmented with deep percolation of applied agricultural water and seepage from the distribution systems used to convey this water. Recharge of the lower confined aquifer results from the subsurface inflow from the valley floor and foothill areas to the east of the eastern boundary of the Corcoran clay member.

The California Department of Water Resources (DWR) estimates an annual overdraft of approximately 205,000 af of groundwater. This over-drafting of groundwater has caused ground subsidence since the mid-1920s. By 1970, 5,200 square miles of the valley were affected and maximum subsidence exceeded 28 feet in an area west of Mendota. Much of this area is now served by the CVP's San Luis Unit (USBR 2005).

The large-scale groundwater use during the 1960s and 1970s, combined with the introduction of imported surface water supplies, has also modified the natural groundwater flow pattern. Groundwater pumping and recharge from imported irrigation water has resulted in a change in regional flow patterns. Flow largely occurs from areas of recharge toward areas of lower groundwater levels due to groundwater pumping (Bertoldi et al. 1991). The vertical movement of water in the aquifer has been altered in this region as a result of thousands of wells constructed with perforations above and below the Corcoran clay member, which, where present, provide a direct hydraulic connection (Bertoldi et al. 1991).

### ***Groundwater Storage and Production***

The aquifer system below the Corcoran clay has historically been the most important source of groundwater in the San Luis Unit. Before deliveries from the San Luis Canal began, about 85 to 90 percent of the total groundwater pumpage came from this aquifer system. The groundwater is of relatively good quality and has about 1,100 milligrams per liter of total dissolved solids (SJVDP 1990).

The more than 1,000 active irrigation wells reported in the Los Banos-Kettleman City area tap the upper (semi-confined) and lower (confined) freshwater-bearing zones (Miller et al. 1971). The depth of wells into the groundwater reservoir generally decreases from west to east. They range in depth from less than 200 feet near Fresno Slough to more than 1,000 feet in the southwestern part of the area along the west border of the valley. Until surface water became available, groundwater was a major source of water supply. Pumping then dropped significantly, except during the drought of 1976–1977, when more than 400,000 af of groundwater was pumped (Belitz 1988). Prior to 1991, seasonal pumping estimates vary from 80,000 to 700,000 af, depending on available surface water supplies (Reclamation 1991).

Groundwater conditions of the San Luis Unit are typified by those of the Westside Sub-basin. This sub-basin consists mainly of lands in WWD and is located between the Coast Range foothills on the west and the San Joaquin River drainage and Fresno Slough on the east. Primary recharge to the aquifer system is from seepage of Coast Range streams along the west side of the sub-basin and deep percolation of surface irrigation. Flood basin deposits along the eastern sub-basin have caused near surface soils to drain poorly thus restricting the downward movement of percolating water. This restricts drainage of irrigation water and results in the development of irrigation problem areas.

Groundwater levels in the Westside Sub-basin were generally at their lowest levels in the late 1960s, prior to importation of surface water. After the CVP began delivery to the San Luis Unit in 1967-68, water levels gradually increased to a maximum in about 1987-88, falling briefly during the 1976-77 drought. Water levels began dropping again during the 1987-92 drought. Through a series of wet years after the drought, 1998 water levels recovered nearly to 1987-88 levels. The fluctuations in water levels illustrate both the importance of CVP deliveries in sustaining groundwater levels and the continuing influence of local and CVP-wide hydrologic conditions on surface water availability and, hence, on groundwater conditions in those areas where groundwater is pumped.

WWD District, Panoche Water and San Luis Water District all have approved groundwater management plans, an indication of the districts involvement in management of their groundwater resources.



### ***Impacts of Agriculture on Groundwater***

Irrigated agriculture has altered both groundwater flow and quality. Significant portions of the groundwater in the unit exceed the CWA's recommended TDS concentration. The dissolved solids content of the groundwater averages about 500 ppm, but ranges from 64 to 10,700 ppm. Calcium, magnesium, sodium, bicarbonates, selenium, sulfates, and chlorides are all present in significant quantities (USBR 2005).

The highest groundwater salinity and selenium concentrations occur in areas of the highest native soil salinity. Many of the soils are naturally saline and high in clay content, which restricts drainage.

During the past 40 years, recharge increased dramatically as a result of imported irrigation water. Percolation of irrigation water past crop roots, pumpage of groundwater from deep wells, and imported surface water used for irrigation have combined to create large downward hydraulic-head gradients. The salts in the irrigation water, and soil salts leached from the unsaturated zone, increased salt and selenium concentrations in groundwater (Dubrovsky and Deverel 1989). In low-lying areas of the valley, and where the water table is within seven feet of land surface, evaporation from the shallow water table further increase salt and selenium concentrations.

A USGS report (Dubrovsky and Deverel 1989) indicated that irrigation had affected the upper 20 to 200 feet of the saturated groundwater zone. This poor quality groundwater zone is moving downward in response to recharge from above the water table and pumping from deep wells.

Increased rates of recharge resulting from percolation of irrigation water, combined with the rapid post-1967 decrease in pumpage, caused a rise in the height of the water table over much of the western valley (Belitz and Heimes 1990).

### ***Groundwater Quality***

Groundwater quality conditions vary throughout the San Joaquin Valley. Total dissolved solids (TDS), boron, nitrates, arsenic, selenium, and dibromo-chloropropane are parameters of concern for agricultural and municipal uses in the San Joaquin River Region. Agricultural use of groundwater is impaired as a result of elevated boron and total dissolved solids concentrations in western Fresno and Kings Counties (SWRCB 1991).

Groundwater zones commonly used along a portion of the western margin of the San Joaquin Valley have high concentrations of total dissolved solids, ranging from 500 milligrams per liter to greater than 2,000 milligrams per liter (Bertoldi et al. 1991). The concentrations in excess of 2,000 milligrams per liter commonly occur above the Corcoran clay layer. These high levels have impaired groundwater for irrigation and municipal uses in the western portion of the San Joaquin Valley.

Contractors in the San Luis Unit with drainage-impacted lands have developed aggressive programs to manage salts in the root zone and to minimize deep percolation through the use of high-efficiency irrigation techniques, such as sprinklers and advanced drip technologies, shortened rows, and the installation of groundwater monitoring wells.

The high TDS content of west side groundwater is due to recharge of stream flow originating from marine sediments in the Coast Range. The high TDS content in the trough of the valley is the result of concentration of salts due to evaporation and poor drainage. Nitrates may occur naturally or as a result of disposal of human and animal waste products and fertilizer. Boron and chloride are likely a result of concentration from evaporation near the valley trough. Organic contaminants contributed by agriculture have been detected in groundwater throughout the region but primarily in areas east of the San Luis Unit where soil permeability is higher and depth to groundwater is shallower. In the central and west-side portions of the valley, where the Corcoran Clay confining layer exists, water quality is generally better beneath the clay than above it.

### ***Production of Drainage Water***

The Northern Area of the San Luis Unit includes approximately 38,000 acres in the Panoche Water District, 4,100 acres in the Pacheco Water District and 5,300 acres in the San Luis Water District. (Pacheco Water District is not included in the current interim contract renewal process as explained in Section 1.1) Of this area, approximately 30,000 acres is presently improved with subsurface drainage systems (SLDFRE DEIS Table C1-4). Drainage water from irrigation within the Northern Area of the San Luis Unit is produced primarily through operation of subsurface tile and deep drain collector systems which remove subsurface water from the plant root zones. Drainage produced within the Northern Area may also result from uncontrolled groundwater intrusion from upslope irrigation, subterranean flows from the Coastal Range, and California Aqueduct seepage. Each of the districts in the Northern Area encourage on-farm drainage management through policies to control surface water discharges, programs to support on-farm irrigation efficiency improvements, and mandatory water conservation planning. Each of the three districts also reuse drainage water within their respective drainage service areas.

All three areas are within the Grassland Drainage Area and participate in the Grassland Bypass Project, which serves a total of 97,000 acres. At present, drainage that leaves each district's boundaries is disposed of by reuse on the 4,000-acre San Joaquin River Water Quality Improvement Project and/or discharged through the Grassland Bypass Project into the San Luis Drain, Mud Slough North and ultimately, the San Joaquin River. In terms of drainage volume, in 2004, Panoche Water District discharged approximately 9,200 af to the Grassland Bypass after drainage reduction through in-district reuse of approximately 2,800 AF and application of approximately 6,300 af for reuse on the San Joaquin River Improvement Project. After the

drainage reduction activities within Pacheco and San Luis Water Districts, Pacheco discharged 1,150 af to the Bypass, and the combined San Luis areas discharged, 1,590 af. Thus, a combined Northern Area of 47,400 acres discharged approximately 12,000 af to surface water.

In the southern area of the San Luis Unit, which includes WWD exclusively, there is no collection of subsurface or surface drainage and there is no discharge of any subsurface agricultural water outside WWD boundaries. Drainage is currently controlled primarily through improvements in irrigation management. WWD has approximately 3,300 flow meters, which aid farmers in precisely measuring the amount of water delivered and in calculating irrigation efficiency. WWD is in the process of pursuing a short-term land fallowing program as a means to balance demand against a water supply that has diminished in its reliability and to reduce drainage impacts.

Reclamation has issued its Final Environmental Impact Statement on the San Luis Unit Drainage Feature Re-Evaluation (SLDFRE) analyzing the effects of implementing drainage service and further issued its Record of Decision (ROD) on March 16, 2007. The ROD reflects Reclamation's decision to implement the in-Valley/water needs land retirement alternative, which includes drainage reduction measures, drainage water reuse facilities, treatment systems, and evaporation ponds. It also includes retiring 194,000 acres of land from irrigated farming.

Notwithstanding the requirements of the San Luis Act and the issuance of the ROD, Panoche, Pacheco (which is located in the San Luis Unit but which is not included in the proposed action), San Luis, and WWD have district-specific policies and methods for dealing with drainage. Lack of a drainage outlet has led to an increase in saline groundwater beneath some portions of the districts.

### **3.1.2 Environmental Consequences to Water Resources**

#### ***No Action Alternative***

Contract provisions under the No Action Alternative stipulate that a tiered pricing structure (80/10/10 tiered pricing) would be applied. Tiered pricing is mandated under the water conservation section of the CVPIA for contracts of more than three years. Due to chronic shortages in CVP contract deliveries in the San Luis Unit, modeling predicts that the number of years when tiered pricing is applicable would be limited to approximately 22 or 24 percent of the time (or one year out of four or five) (See Figure 3.1-1). Based on modeling during the interim renewal contract period (no more than 26 months,) there is a relatively low chance that tiered pricing would be in effect. Water supplies do not typically meet demands for most Contractors and many Contractors are very active on the water market purchasing water supplies. Since much of the San Luis Unit is planted in permanent crops and these Contractors have paid upward

of \$700 per ac-ft in dry years to preserve their crop plantings investment, increasing water prices due to tiered pricing would not change water use trends.

Also, water users within the San Luis Unit have been installing high efficiency irrigation systems without the incentive of CVPIA tiered pricing in part to manage drainage and in particular to maximize available supplies during times of shortage. Those systems are frequently utilized to sustain permanent crops, and it is unlikely that the systems would be abandoned on such crops even in years of full supplies. Much of the San Luis Unit is drainage impacted, so high efficiency irrigation is implemented as a mechanism for reducing deep percolation and subsurface drainage production.

Groundwater as an alternate source may contain salts or boron unsuitable for irrigation of permanent crops depending on location. For those areas where groundwater is of suitable quality and therefore available for irrigation, CVP water is considered to be a supplemental supply for most agricultural contractors and therefore these contractors already rely on groundwater supplies and in some cases water transfers to meet on farm needs. Alternate surface water supplies frequently are expensive. Thus, tiered pricing is unlikely to cause a grower to switch to alternate supplies.. In a limited number of the Contractor's service areas switching to groundwater is an option. This option would only be utilized, (as stated above,) if the cost/benefit ratio and the water quality were sufficient to warrant it. Due to continuing overdraft conditions, districts realize that when pumping groundwater above safe yield levels they are mining dry year supplies and that this supply cannot be relied on continually as it is not sustainable.

In areas such as Panoche, San Luis and WWDs, where groundwater is already utilized to meet crop demands, farmers would have no alternative but to pay the additional tiered pricing costs as any further reduction in water supplies would lead to further overdraft and potentially for subsidence.

For the three San Luis cities where the CVP supply is the only water supply available, there is no opportunity to make cost comparisons and switch to alternate water supplies. These communities have a greater proportion of low income families who already are struggling to afford their water service charges. Tiered pricing may cause families to minimize water use to health and safety levels or below.

In summary, the No Action Alternative is not likely to result in the application of tiered pricing during the term of the contracts because of the short duration of interim renewal contracts and the reasonable expectation that sufficient CVP allocation to trigger the tiers would occur in only every fourth or fifth year. Further, even if tiered pricing were to apply, it is unlikely to result in a

reduction in use of surface water use, a change in groundwater, or other actions that could affect water resources. The contractors continue to have less water supply (surface water and groundwater) than demanded, conditions that exist notwithstanding their careful water management (i.e., installation and use of highly efficiency irrigation systems). For those reasons, and others discussed in this EA, implementation of the No Action Alternative is not likely to cause an impact to water resources. As discussed below, the only potential impacts of the No Action Alternative are economic or related to environmental justice.

The contract provisions under the No Action Alternative also stipulate that a definition of M&I water would be applied. Having water use on a less than five acre parcel defined as M&I would not result in a change in water use but would have an impact on the rates Reclamation collects. It is unlikely with the small number of parcels involved, the small size of the parcels and the small quantities of water involved that changing this definition would have any effects on water resources.

Construction or treatment related to implementation of the SLDFRE ROD is not reasonably expected to take place during the term of the interim renewal contracts because Federal funds have not yet been authorized for such activities. The federal government is on a three-year federal budget cycle requiring planning for large projects requiring large funding streams to be budgeted several years in advance. Funding for implementation of the ROD was preliminarily projected to be \$875.5 million in the Environmental Impact Statement (EIS). However, more recent and more accurate projections contemplate costs for implementing the ROD at \$2.6 billion. Further, although the NEPA has been completed, authorization has not been received and planning and engineering have only recently been instituted.

In part because of these budget issues and continuing planning efforts, Reclamation has been involved in discussions with a number of parties concerning alternatives to implementation of the ROD. Any alternative resolution of the drainage service issue is speculative at this time.

Although the current approvals for the Grassland Bypass Project (GBPP) will terminate at the end of 2009, it is anticipated that drainage discharges to surface waters from this project will remain similar to historical quantities and quality during the tenure of the interim renewal contracts. The continuation of the GBPP will be analyzed under separate environmental review.

Reclamation does not anticipate that the No Action Alternative would cause any changes from historical values in the quantity, quality or discharge of drainage emanating from or within the San Luis Unit during the twenty-six months of the interim renewal contracts.

Each of the San Luis Unit Contractors for which interim renewal contracts are proposed would continue to operate and maintain facilities related to their individual water delivery activities,

including turnouts from pumping stations on the San Luis Canal, and in the case of Westlands, the Coalinga Canal and pumping plant, on terms substantially the same as the existing long-term contracts. These activities relate to already constructed facilities on federal right of ways with no anticipated changes in activity level or use.

### ***Proposed Action***

Impacts to water resources associated with the Proposed Action would be comparable to those described under No Action Alternative although tiered pricing provisions are not included in these contracts. Renewal of the interim renewal contracts with only minor administrative changes to the contract provisions would not result in a change in contract water quantities or a change in water use. Water delivery during the interim renewal contract period would not exceed historic quantities. It is therefore assumed that there would be no effect on surface water supplies or quality.

The renewal of interim contracts delivering the same quantities of water that have historically been put to beneficial use would not result in any growth-inducing impacts. In addition, no substantial changes in growth are expected to occur during the short time frame of this renewal.

As with the No Action Alternative, language regarding the provision of long term drainage service pursuant to the San Luis Act is included in the Proposed Action. Such long term service is not separately analyzed in this document for the reasons described in the No Action Alternative section. However, Reclamation does expect to provide short-term funding during the term of the interim renewal contracts for the continued development of locally owned and operated drainage reuse areas. The environmental effects of the reuse areas were examined in the Grassland Bypass Project Environmental Impact Statement and Environmental Impact Report. Under the interim renewal contracts, contractors would be obligated to continue to meet legal obligations as well as terms and conditions of BOs related to the contracts.

### ***Cumulative Effects***

Although as the area of the San Luis Unit grows in population there would be additional competition for the CVP supplies among the differing purposes of use, the quantity of water provided under these seven CVP interim renewal contracts has been and would continue to be static. No new water supplies are being added to the region. Renewal of the seven interim renewal contracts would have no impact on water resources and as such has no cumulative effects.

## **3.2 Land Use**

### **3.2.1 Affected Environment**

The following discussion provides information on land uses within each contractor's service area and includes a discussion of current agriculture and future trends in agriculture as applicable. It also includes a discussion of current land use planning and development projects. While this information is indicative of land use and growth trends in the San Luis Unit, it is not intended to be a comprehensive list of every development project planned or proposed.

#### ***City of Avenal***

Incorporated in 1979, the City of Avenal is located in western Kings County in the southern portion of the San Joaquin Valley. The urbanized portion of the city is located around the intersection of State Highways 33 and 269. The current population is 16,200 (Department of Finance 2004).

The City of Avenal encompasses 19.5 square miles, of which 2.5 square miles are urbanized. Its sphere of influence contains an additional 20.5 square miles (Collins and Associates 1992). Almost one-half of the 19.5 square miles of the City of Avenal's planning area is located in the Kettleman Hills area of the city. Also, approximately five square miles of this land are owned by oil companies and are used for oil production.

The 2.5 square miles of urbanized area includes the Avenal State Prison. The remainder of the planning area is located in the San Joaquin Valley to the east of the Kettleman Hills and is traversed by both Interstate 5 and the California Aqueduct.

At present, all of the City of Avenal's CVP water supply is used for M&I purposes. Avenal relies on commercial and light industrial growth as a base for economic stimulation and growth in the area.

The City of Avenal is experiencing growth, similar to that throughout the rest of the San Joaquin Valley. Most of the growth in the city is residential development, primarily on in-fill lots. There is also a small amount of commercial growth planned.

#### ***City of Coalinga***

The City of Coalinga is located about 60 miles southwest of Fresno. It encompasses 4.1 square miles however its sphere of influence encompasses an additional 8.2 square miles. It is expected that the City of Coalinga will expand to 9.4 square miles by 2015 and that this growth will be mostly M&I in nature. The current population of the city is 16,700 (Department of Finance 2004). Of the approximately one dozen farmers in and near the City of Coalinga's water service area, none receives water from the City for farming purposes, but domestic water is provided

because of the very poor domestic quality of the groundwater. All of the City of Coalinga's CVP water supply is used for M&I purposes, and M&I growth is anticipated to increase in the future.

### ***City of Huron***

The City of Huron lies nine miles east of Interstate 5, three miles south of Highway 198, and 60 miles south of Fresno. The City encompasses 1.6 square miles in the San Joaquin Valley's west-side region, and has a population of approximately 6,975 (Department of Finance 2004); however, the population increases to over 9,000 during the harvest season (i.e., April to November). WWD surrounds the City of Huron. All of the City of Huron's CVP water is used for M&I purposes. M&I, commercial, and residential growth is anticipated in the City of Huron.

### ***Panoche Water District***

Panoche Water District is located on the western side of the San Joaquin Valley in both Merced and Fresno Counties. The district is comprised of approximately 38,000 acres with a population of approximately 300. A small amount of CVP water is diverted annually to satisfy domestic needs within the district. Panoche Water District is primarily an agricultural district. M&I water use is incidental to agricultural use and amounts to less than 50 af per year. M&I use is not expected to increase because it is not anticipated that agricultural land would be converted to other land uses.

Panoche Water District's conveyance system is composed of approximately 45 miles of canals and pipelines to serve its landowners. Panoche Water District obtains CVP water through two diversion points on the Delta-Mendota Canal and five diversion points on the San Luis Canal.

There are approximately 65 water users in the district, which includes 60 landowners. The largest landowner farms approximately 9,000 acres, while the smallest landowner farms less than 20 acres. The landowner base in the district has remained very stable, with the majority of the landowners having been there since the 1940s and 1950s. Approximately 26 percent of the land is leased out; the remaining land is farmed directly by the landowners. The district also participates in an active drainage management program that reduces drain water volumes and constituent loads by altering cropping patterns and/or irrigation methods in targeted areas. Primary crops produced in the district in 1997 included cotton, processing or cannery tomatoes, melons and alfalfa hay (Stoddard & Associates 2000). Land use trends are toward permanent crops installed on drip irrigation.

### ***San Luis Water District***

The San Luis Water District is located near Los Banos and within both Merced and Fresno Counties. The district's current size is approximately 66,458 acres. The southern section of the district located in Fresno County is primarily agricultural. The land is planted with either row crops, including cotton and melons, or permanent crops, including primarily almonds. In recent



years, some parcels in this area of the district have not been farmed because they are of marginal quality or have high water costs or drainage problems.

The district's current population is approximately 700, with most individuals residing in the community of Santa Nella, located in the extreme northern portion of the district.

Although water deliveries by the San Luis Water District historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The San Luis Water District currently supplies approximately 800 af per year to approximately 1,300 homes and businesses. M&I demands within the district are expected to increase.

M&I use primarily occurs in the northern section of the district, which is located in Merced County. It is anticipated that the conversion from agricultural use to M&I use will occur mostly in this section of the district. Approximately 10,000 acres identified as potential development locations are currently in the planning stages with Merced County and the district. Much of the land targeted for M&I development is currently unused for irrigated agriculture.

#### ***Westlands Water District (WWD)***

WWD covers almost 950 square miles of prime farmland between the California Coast Range and the trough of the San Joaquin Valley in western Fresno and Kings Counties. It averages 15 miles in width and stretches 70 miles in length from Mendota on the north to Kettleman City on the south. Interstate 5 is located near the district's western boundary. Nearly all land within the current WWD service area was at one time farmed using groundwater. The first deliveries of CVP water from the San Luis Canal to WWD began in 1968.

Currently WWD's district boundaries encompass 604,000-acre with an irrigable acreage of 567,800 acres. WWD provides water via gravity water service and pumping from the San Luis Canal depending on location. More than 60 different crops are grown commercially in WWD. The cropping patterns have changed over the years depending upon water availability, water quality, the agricultural economy and market factors. The acreage trend is toward planting of vegetable and permanent crops while cotton and grain acreage have decreased.

The current population within the WWD is approximately 50,000. The major community entirely within WWD is Huron. Three Rocks, and Five Points are smaller communities within WWD. The communities of Firebaugh, Mendota, Kerman, Tranquillity, San Joaquin, Lemoore, and Stratford lie just outside the district's eastern edge.

CVP water in the district is used for both agricultural and M&I uses. The majority of CVP supply is used in agriculture, and of the almost 800 water users in the district, approximately 600 are agricultural users and approximately 180 are M&I users. Unlike many other key growing

areas of California, urbanization is not a direct threat to productivity. The district's M&I deliveries include cities and governmental agencies; however, none of this water is treated by the district before its distribution. Current M&I deliveries are estimated to be approximately 2,000 af per year and account for only a very small percentage of the district's CVP supplies.

### ***CDFG's Facilities***

The CDFG currently receives 10 af of M&I water for domestic use at the headquarters of the Mendota Waterfowl Management Area. The headquarters consists of five houses, a conference hall, and a workshop, all of which are located at 4333 South Santa Fe Grade, Mendota, California, on approximately one acre of land. There is an on-site water treatment facility that is used to treat the CVP water before it is used for landscaping and at the visitor's center and employee residences.

## **3.2.2 Environmental Consequences**

### ***No Action Alternative***

The renewal of contracts with only minor administrative changes to the contract provisions would not provide for additional water supplies that could act as an incentive for increased acreage of agricultural production. Generally, lands within the San Luis Unit that are productive are farmed. Uncertainty of supply due to the short-term duration of the renewal could act as a disincentive for farmers to preserve their lands from urban developments. However, most areas within the San Luis Unit are not near current M&I growth. Also for those limited areas that are near such growth, the short terms of the interim renewal contracts do not provide sufficient certainty to permit the M&I development of land now in agricultural production, meaning that the No Action Alternative is not likely to have impacts on conversion of irrigated land to other uses.

Contract provisions stipulating the pricing structure for delivered water (80/10/10 tiered pricing) are not likely to result in changes in water use as the districts within the San Luis Unit are water short even in high allocation years. Land would continue to be used for existing purposes. Also because this is an interim renewal process, it is unlikely that the uncertainty of the water supply would result in any changes in agricultural practices that would influence land use.

Having water used on a less than five acre parcel defined as M&I would not result in a change in land use but would only have an impact on the rates Reclamation collects. It is unlikely with the small number of parcels involved and the small size of the parcels and the small quantities of water involved that this changing definition would have any effects on land use resources.

### ***Proposed Action***

Impacts to land use associated with the Proposed Action would be comparable to those described under the No Action Alternative. Tiered pricing with its potential price increases is not included as part of the Proposed Action. The lack of tiered pricing would have no impact on land use. It is possible that conversion from agricultural uses to M&I uses would occur during the term of the interim renewal contracts, but if such conversions occur it would not be a result of the interim renewal contracts due to their short terms. The pressures to convert are the same pressures that would have existed with the previous expiring long term contracts and with the No Action Alternative. Local land use agencies have the oversight of these actions. It is unlikely that significant conversions to M&I uses would occur during the term of the interim renewal contract or that the short-term water supply under that contract would contribute to any such conversion. Since contracts are mandated to be renewed for the quantity of water that can be put to beneficial use, the water supply would be available for either purpose of use and the interim renewal of contracts would not affect the potential M&I conversion.

### ***Cumulative Effects***

Since the alternatives have no impact on land use, they also have no cumulative effects.

## **3.3 Biological Resources**

### **3.3.1 Affected Environment**

This section analyzes the potential impacts to listed and non-listed (under the federal Endangered Species Act [ESA]) species and habitats with the potential to occur in the study area and other portions of the San Luis Unit.

The study area is located in the San Joaquin Valley and includes those portions of Fresno, Kings, and Merced counties comprising the service areas of the San Luis Unit contractors.

Baseline information on biological resources in the San Luis Unit Study Area was compiled primarily from literature and information gathered from water district general managers and staff. Data sources included appendices to the CVPIA PEIS (Reclamation 1997b, 1997e), Draft EA for Eastside/Westside Water Transfer/Exchange (Tetra Tech 2000), Biological Opinion on Operation of the CVP and Implementation of the CVPIA (Reclamation 2000d), A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988), vegetation categories derived from CALVEG data (Matyas and Parker 1980), the Grassland Bypass Project EIS/EIR (Reclamation 2001b), the CDFG California Natural Diversity Database, and the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society 2000).

***Documents Addressing Potential Impacts to Listed Species Associated with Deliveries to the San Luis Unit***

Reclamation and the DWR are currently cooperating in conducting endangered species consultations to address the combined long-term operations of the CVP and SWP, as part of the Operations Criteria and Plan (OCAP). Reclamation is the lead federal agency and DWR is the lead state agency for these consultations. Reclamation is consulting with the US Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) regarding potential operational impacts to species listed under the federal ESA. DWR is consulting with CDFG regarding potential operational impacts to species listed pursuant to the California Endangered Species Act (CESA). The OCAP is a detailed analysis and explanation of the criteria and procedures for conducting combined CVP and SWP operations.

The seven interim water service contracts contain provisions that allow for adjustments resulting from court decisions, new laws, and from changes in regulatory requirements imposed through re-consultations. Accordingly, to the extent that additional restrictions are imposed on CVP operations to protect threatened or endangered species, those restrictions would be implemented in the administration of the seven interim water service contracts considered in this environmental assessment. As a result, by their express terms the interim renewal contracts analyzed herein would conform to any applicable requirements lawfully imposed under the federal ESA or other applicable environmental laws.

In addition, Reclamation has consulted under the ESA on the Operations and Maintenance Program Occurring on Bureau of Reclamation Lands within the South-Central California Area Office, resulting in a Biological Opinion issued by the FWS on February 17, 2005 (1-1-04-0368). The opinion considers the effects of routine operation and maintenance of Reclamation's facilities used to deliver water to the study area, as well as certain other facilities within the jurisdiction of the south-Central California Area Office, on California tiger salamander, vernal pool fairy shrimp, valley elderberry longhorn beetle, blunt-nosed leopard lizard, vernal pool tadpole shrimp, San Joaquin woolly-threads, California red-legged frog, giant garter snake, San Joaquin kit fox, and on proposed critical habitat for the California red-legged frog and California tiger salamander.

The following discussion describes the distribution of natural and semi-natural communities and other land uses that have the potential to occur within the San Luis Unit project area. The following discussion also summarizes the distribution of land uses and natural communities that are within two miles of the San Luis Unit action area.

### ***Land Use and Natural Communities Within Two Miles of the San Luis Unit***

Immediately west of the San Luis Unit lies the Diablo Range of the California Coast Range. The area west of the northern portion of the San Luis Unit includes a portion of the San Luis Reservoir, O'Neil Forebay, and Los Banos Reservoir near Santa Nella in Merced County. From here, the western portion follows foothills through portions of the Panoche Hills and Monocline Ridge in western Fresno County. Other than the open water of the reservoirs, this area along most of the western boundary is primarily composed of open areas of annual grasses with linear riparian communities along intermittent streams. Further south, the land adjacent to the San Luis Unit includes grasslands and portions of coastal scrub, chaparral, and oak woodland communities at the higher elevations of hills west of Coalinga. The southern portion of the San Luis Unit includes a mix of oil development, agricultural lands, and annual grasses on the Kettleman Hills near Avenal in southwestern Fresno County and western Kings County.

Immediately southeast of the San Luis Unit lies the north shore of what was historically the open water and tule marshes of Tulare Lake. The area includes some riparian and wetland areas but is largely dominated by irrigated agriculture, primarily row crops. Going north, the area east of the San Luis Unit includes the historical marshlands of the Fresno Slough, which were created by the channelization of the Fresno Slough and flood control operations of the Kings River from its departure through the area of Tranquility and the Mendota Wildlife Area. Most of these lands are used for irrigated agriculture, but there are also areas of restored and conserved wetlands such as the Mendota Wildlife Area. From there, the eastern portion of the San Luis Unit extends northwest through Mendota and the Mendota Pool area along the San Joaquin River. It continues along the area of the Delta-Mendota Canal through irrigated farmland mixed with restored wetlands up to the northern portion of the San Luis Unit near Santa Nella.

### ***Land Use and Natural Communities Within the San Luis Unit***

The San Luis Unit encompasses approximately 1,322 square miles of land situated on arid plains and low hills on the west side of the San Joaquin Valley. It lies between the lowlands of the valley trough on the east, the foothills of the Diablo Range on the West. It lies north and west of the Tulare Lake bed and just south of the Grasslands wetland areas. At present, approximately 14 percent of the San Luis Unit's land area remains undeveloped. Most remaining undeveloped lands are along the foothills of the Diablo Range at the western edge of the San Luis Unit. Approximately 71 percent of undeveloped lands are in the hills surrounding the Pleasant Valley near Coalinga and the Kettleman Hills near Avenal. The remaining 29 percent is in the northern portion of the San Luis Unit near Santa Nella and various small parcels throughout the San Luis Unit (DWR 2004).

Development of land within the San Luis Unit began many decades ago, and is continuing through the present. Undeveloped lands on the valley floor are now restricted to small habitat

patches that are fragmented and isolated from each other. As a result of the conversion of natural habitats, many species have been displaced or extirpated from the region. Most of the species that occurred historically are now restricted to habitat patches that are fragmented and isolated, making it difficult for viable populations to exist. Some species have adapted to portions of the new landscape and are able to maintain populations. However, as a result of the largely fragmented habitats, the potential for expansion or growth of these populations is greatly reduced. Because of the reduction in habitat available to these species, remnants of habitat such as wetlands and riparian forests are increasingly valuable and important to resident and migratory wildlife species.

### ***Fisheries***

On the arid west side of the San Joaquin River basin, relatively small intermittent streams drain the Coast Range but rarely reach the San Joaquin River. On the east side, numerous streams and three major rivers drain the western Sierra Nevada and provide flow to the San Joaquin River. The lower San Joaquin River is adjacent to the study area along portions of the eastern boundary beginning at the Mendota Pool. Mud and Salt Sloughs are tributaries to the San Joaquin River that receive drainage (including tile water and tailwater) from the northern districts, as well as other drainage from their watersheds.

Historical fishery resources within the study area were different from fishery resources present today (Reclamation 1997e). Many native species have declined in abundance and distribution, and several introduced species have become well-established. The major factors producing changes in aquatic habitat within the project area are habitat modification, species introduction, and over fishing of fishery resources that originate in the project area (Moyle 2002). These factors and anthropogenic activities within the project area have adversely affected the fisheries resources in the area.

The San Joaquin River in the vicinity of the San Luis Unit is characterized as a warm-water, Deep-Bodied Fishes Zone composed of a variety of habitats, and supports steelhead trout and Chinook salmon to the barrier at the Merced River in years with sufficient water flows and timing. The natural habitat and water quality of the River and Mud and Salt Sloughs have been highly modified by the addition of canals, agricultural drainwater, and seasonal regulation of main stem River flows.

Little information exists about fishery resources in water bodies located within the San Luis Unit project area. The intermittent streams located within the project area are not known to support anadromous fish and are unlikely to support populations of resident fish because of their hydrologic conditions, which are often characterized by low (or no) flows, increased temperatures, and reduced water quality. The numerous water conveyance facilities and water

supply and drainage canals could and do support warm-water fish, such as bass, crappie, sunfish, catfish, and shad.

Laboratory and field research has demonstrated that elevated waterborne and/or dietary concentrations of several trace elements in the San Joaquin Valley drainwaters are toxic to fish and wildlife. Selenium is the most toxic of these; other constituents include arsenic, boron, chromium, mercury, molybdenum, and salts (SJVDP 1990). Elevated selenium levels have been detected in a wide variety of fish in the San Luis Unit area, including Chinook salmon and striped bass (Hamilton et al. 1986; Saiki and Palawski 1990). The bio-accumulative food chain threat of selenium contamination on fish and aquatic birds has also been well documented.

NMFS has designated critical habitat within the San Joaquin River system for listed salmonid species (70 FR 52487).

### ***Vegetation and Wildlife***

This section discusses land uses and land cover types within the San Luis Unit. It also includes a discussion of vegetation types, plants, and animals located in and adjacent to the study Area. In addition to the natural, semi-natural and agricultural communities discussed below, other uses in the San Luis Unit include land developed for industrial and transportation uses, mixed urban uses, residential and commercial development, and land that is barren.

### ***Wetlands***

Available wetland habitats in the two-mile buffer area around the study area include both riparian corridors and the more classic wetland habitat with emergent vegetation associated with the San Joaquin River.

Palustrine wetlands include any non-tidal wetlands not classified as lacustrine, estuarine or riverine and having no deepwater habitat associations. In the San Joaquin Valley, this classification includes both permanent and seasonal fresh emergent wetlands.

In the San Joaquin Valley, the topography is generally level or gently rolling. Wetlands follow basin contours or occur in conjunction with riverine or lacustrine environments. Subtypes of permanent emergent wetlands are generally classified by species presence and/or their association with specific terrestrial habitats. Because emergent wetlands are typically inundated for most of the year, the roots of vegetation have evolved to thrive in an anaerobic environment. Characteristic floral species are erect, rooted hydrophytes dominated by perennial monocots such as the common tule, cattail, various sedges, and spike rushes. Permanent wetland habitat can occur on virtually any slope or exposure that provides a saturated depression.

n the San Joaquin Valley, seasonal fresh emergent wetlands most often occurred in grasslands and saltbush areas. A broad description of a seasonal wetland would include any area that ponds water during the wet season. Vegetation may vary from Italian rye grass in the driest areas to spike rush in the wettest. Cattail species are conspicuously absent from seasonal wetlands as they are indicative of permanent wetlands. These wetlands were historically composed of vast areas that, although inundated only periodically, provided crucial seasonal habitat for many wildlife species, most conspicuously for waterfowl and other migrants. They can occur as a subtype in almost any community.

Very little area in the San Luis Unit (0.02 percent) is mapped as seasonal emergent wetlands. Wetlands occur primarily as small parcels along the eastern edge of the WWD nearest to historical marshlands along Fresno Slough. A small area of wetlands is also mapped in an area of riparian woodland habitat maintained at the O'Neill Forebay Wildlife Area. A large mosaic of seasonal wetlands and grasslands occurs northeast of the San Luis Unit and near the San Luis National Wildlife Refuge Complex.

### ***Riparian Communities***

Riparian communities develop in the floodplains of low-gradient rivers and streams. They occur adjacent to freshwater reaches of permanent and seasonal watercourses. Typically, riparian land cover occurs as narrow bands of vegetation immediately adjacent to watercourses. In and near the San Luis Unit, tree species include non-native salt cedar and cottonwood. Shrub cover includes riparian scrub vegetation, which includes several community types dominated by different shrub species, including buttonbush scrub, elderberry savanna, great valley mesquite scrub, and great valley willow scrub (FWS 1998).

Approximately 0.2 percent of the San Luis Unit is mapped as riparian communities. Of this, approximately 42 percent is in an area of riparian woodland habitat maintained at the O'Neill Forebay Wildlife Area. The remainder is primarily riparian scrub with intermittent cottonwoods and non-native salt cedar along seasonal streams that flow into the San Luis Unit from the Diablo Range, such as Los Banos Creek, Little Panoche Creek, Panoche Creek, Cantua Creek, Las Gatos Creek, Warthen Creek, and Zapato Chino Creek.

### ***Water***

Open water in the San Luis Unit is primarily in reservoirs and water conveyance facilities. Streams in the San Luis Unit originate on the Coast Range and typically will carry water for a few hours or days after a rainfall event. Historically, the water from these streams would spread out over the plain of the western San Joaquin Valley and would seldom reach the San Joaquin River (Mead 1901). With the exception of heavy rainfall events, open water covers less than 1



percent of the study area and is nearly all found in the San Luis Canal, parts of O'Neill Forebay, Sn Luis Reservoir and various other canals.

Riverine habitats consist of perennial or intermittently flowing rivers and streams. The San Joaquin River with its major tributaries and sloughs is the major riverine habitat within two miles of the study area. In the San Luis Unit itself, there are numerous small and intermittent streams occur along. Riverine habitats commonly are associated with adjacent riparian and wetland habitat types and are valuable to wildlife as well as aquatic species for cover, foraging, and travel corridors.

Freshwater emergent wetlands are among the most productive wildlife habitats in California, providing food, cover, and water for over 160 species of birds, and numerous species of mammals, reptiles, and amphibians (Mayer and Laudenslayer 1988). Common plant species found in freshwater emergent wetlands habitats include big leaf sedge, baltic rush, and redroot nutgrass around the upper margins; saltgrass in more alkali sites; and common cattail, bulrushes, and arrowhead in the wetter sites.

Vernal pools are a rare and protected form of seasonal freshwater emergent wetlands found only within grassland habitats. The pools are shallow depressions filled with water from winter storms that subsequently dry up during spring or early summer. A unique assemblage of special status plant and invertebrate species is associated with the ephemeral pools, with the salinity, alkalinity, and the length of time that water persists generally determining plant species composition. Within the general area, vernal pool occurrences are concentrated east of the San Joaquin River.

Unlined canals and drains provide marginal wetland and aquatic habitat throughout large portions of both the two-mile region and the study area. The quality of this habitat varies depending on the degree and frequency of maintenance, water quality, habitat type of adjacent lands, consistency of flows, and other factors. Some reaches of delivery canals and drains contain emergent and aquatic plants such as bulrushes, cattails, and pondweeds, as well as undesirable invasives such as perennial pepperweed. Larger canals and drains may support warmwater fisheries. Common fish species potentially present in canal fisheries include largemouth and striped bass, threadfin shad, Sacramento blackfish, bluegill, white catfish, black bullhead, black crappie, green sunfish, carp, goldfish, and mosquitofish.

### ***Ruderal or Unclassified Rangeland***

This common habitat type is always associated with disturbed lands. It can occur as large areas (e.g., abandoned croplands) or as small inclusions within other terrestrial communities. These lands make up approximately 3.5 percent of the study area (University of California-Santa Barbara 1996; California State University-Stanislaus, Endangered Species Recovery Program

2004). In the study area, this habitat is most typically associated with road and utility rights-of-way (ROW's), field borders, ditch ROW's, and abandoned fields. Vegetation usually consists of scattered native and nonnative shrubs, generally with nonnative herbaceous species dominating the understory. Habitat value is typically low for most terrestrial wildlife species, although the interconnecting matrix of ruderal vegetation associated with farm roads, field margins, irrigation ditches, and fencelines in the San Joaquin Valley provides wildlife movement corridors in the otherwise agriculture-dominated landscape.

### ***Idle/Retired Farmland***

Lands of this category are similar to abandoned farmlands in the ruderal or unknown rangeland category, but with less time out of agricultural production. Similarly, the habitat value of these lands may vary with land management practices.

### ***Shrub and Brush, Herbaceous, and Mixed Rangeland***

Rangelands are classified into three basic types. The shrub and brush rangeland is dominated by woody vegetation and is typically found in arid and semiarid regions. Mixed rangelands are ecosystems where more than one-third of the land supports a mixture of herbaceous species and shrub or brush rangeland species. Herbaceous rangelands are dominated by naturally occurring grasses and forbs, which are typically grazed by livestock, as well as some areas that have been modified to include grasses and forbs as their principal cover. Rangelands are, by definition, areas where a variety of commercial livestock are actively maintained. . Rangelands may occur within the 2-mile radius of the San Luis Unit along the western boundary and around the northernmost area of the Unit. Within the rangeland community, a number of herbivorous animals such as grasshoppers, jackrabbits, and kangaroo rats compete with livestock for forage.

### ***Agricultural Habitat***

The most dominant habitat in the San Luis Unit is agricultural land, including active, temporarily fallowed, and retired croplands, and orchards/vineyards. Croplands in the San Joaquin Valley are generally concentrated along the central, flatter portion of the valley, with orchards and vineyards extending into the western foothills. The mix of crops varies from year to year depending on economic factors and predicted water supplies. Cotton and row vegetables historically have been the dominant crops, but current trends are toward increasing acreages of higher-value permanent crops in the San Luis Unit. Harvesting practices, crop selections, the proximity and amount of nearby undisturbed vegetation, and the types of food and foraging cover provided by the crops all affect the value of agricultural land as wildlife habitat. Some row and grain crops provide foraging habitat for hawks and migrating and wintering waterfowl.

Although natural communities provide the highest value for wildlife, many of these historical natural habitats have been largely replaced by agricultural habitats with varying degrees of

benefits to wildlife. The intensive management of agricultural lands, including soil preparation activities, crop rotation, grazing, and the use of chemicals, effectively reduces the value of these habitats for wildlife. Many species of rodents and birds have adapted to croplands, which often requires that the species be controlled to prevent extensive crop losses. This may require intensive management and often the use of various pesticides. Rodent species that are known to forage in row crops include the California vole, deer mouse, and the California ground squirrel. These rodent populations are preyed upon by Swainson's hawks, red-tailed hawks, and black-shouldered kites. Orchards, vineyards, and cotton crops generally provide relatively low-quality wildlife habitat because the frequent disturbance results in limited foraging opportunities and a general lack of cover. Pasture and row crops provide a moderate-quality habitat with some limited cover and foraging opportunities.

Pasture habitat can consist of both irrigated and unirrigated lands dominated by perennial grasses and various legumes. The composition and height of the vegetation, which varies with management practices, also affects the wildlife species composition and relative abundance. Irrigated pastures may offer some species habitats that are similar to those of both seasonal wetlands and unirrigated pastures. The frequent harvesting required, which reduces the overall habitat quality for ground-nesting wildlife, effectively reduces the value of the habitat. Irrigated pastures provide both foraging and roosting opportunities for many shorebirds and wading birds, including black-bellied plover, killdeer, long-billed curlew, and white-faced ibis. Unirrigated pastures, if lightly grazed, can provide forage for seed-eating birds and small mammals. Ground-nesting birds, such as ring-necked pheasant, waterfowl, and western meadowlark, can nest in pastures if adequate vegetation is present. Small mammals occupying pasture habitat include California voles, Botta's pocket gophers, and California ground squirrels. Raptors including red-tailed hawks, white-tailed kites, and prairie falcons prey upon the available rodents. In areas where alfalfa or wild oats have been recently harvested, the large rodent populations can provide high-quality foraging habitat for raptors.

The habitat value in cropland is essentially regulated by the crop production cycle. Most crops in California are annual species and are managed with a crop rotation system. During the year, several different crops may be produced on a given parcel of land. Many species of rodents and birds have adapted to croplands, which often requires that the species be controlled to prevent extensive crop losses. This may require intensive management and often the use of various pesticides. Rodent species that are known to forage in row crops include the California vole, deer mouse, and the California ground squirrel. These rodent populations are preyed upon by Swainson's hawks, red-tailed hawks, and black-shouldered kites.

Orchard-vineyard habitat consists of cultivated fruit or nut-bearing trees or grapevines. Orchards are typically open, single-species, tree-dominated habitats and are planted in a uniform pattern

and intensively managed. Understory vegetation is usually sparse, but grasses or forbs are allowed to grow between rows to reduce erosion in some areas. In vineyards, the rows under the vines are often sprayed with herbicides to prevent the growth of herbaceous plants.

Wildlife species associated with vineyards include the deer mouse, California quail, opossum, raccoon, mourning dove, and black-tailed hare. Nut crops provide food for American crows, scrub jay, northern flicker, Lewis' woodpecker, and California ground squirrel. Fruit crops provide additional food supplies for yellow-billed magpies, American robin, northern mockingbird, black-headed grosbeak, California quail, gray squirrel, raccoon, and mule deer. Loss of fruit to grazers often results in growers using species management programs to force these species away from the orchards.

***Alkali Desert Scrub, also called San Joaquin Saltbush or Chenopod Scrub***

Relict stands of this shrub-dominated habitat type are widely scattered throughout the San Joaquin Valley, but are more commonly found in Tulare Basin, south of the project area. Alkali scrub occurs in areas characterized by impeded drainage with fine-textured, alkaline, or saline soils. Vegetation is generally dominated by salt-tolerant shrub and subshrub species such as perennial saltbush, iodine bush, alkali blite, and goldenbush, but also could include forbs and grasses such as alkali heath, alkali weed, pickleweed, alkali sacaton, and saltgrass. Wildlife species associated with alkali scrub are specifically adapted to its open, sparsely vegetated, dry conditions and include several special-status species.

***Annual and Perennial Grasslands***

These habitat types occur throughout the San Joaquin Valley, mostly on level plains to gently rolling foothills at elevations immediately higher than surrounding areas. Annual grasslands are comprised primarily of introduced annual grasses and forbs such as wild oats, ripgut brome, soft chess, and barley. Habitat value is variable, depending largely on current management and grazing history. Perennial grasslands are typically associated with moist, lightly grazed relict areas within annual grasslands-dominated landscapes and are quite rare. Characteristic native perennial grasslands species include purple needlegrass and alkali sacaton. Grassland habitats are important foraging areas for a large number of species, including hawks and swallows, mourning doves, loggerhead shrike, coyotes, and badgers. The habitat type supports large populations of small prey species, such as deer mice, pocket gophers, voles, and ground squirrels. Birds such as killdeer, ring-necked pheasant, western meadowlark, western kingbird, and horned lark nest in grassland habitats. Common reptiles and amphibians of grassland habitats include western fence lizard, common kingsnake, western rattlesnake, common garter snake, and western toad. An extensive list of terrestrial special-status species are also associated with the grassland habitat types. *Vernal pool* communities, shallow depressions filled with water from winter storms that subsequently dry up during spring or early summer, are a rare and

protected form of wetland found only within grassland habitats. Grassland habitats in the study area or within a 2-mile radius are generally located along the western margins of the San Joaquin Valley.

### ***Valley Foothill Riparian***

This habitat type is found in valleys and bottomlands bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. It is generally associated with low velocity rivers and streams, floodplains, and gentle topography. In the study area, major valley foothill riparian habitats are associated with the San Joaquin River and major tributary streams.

Dominant tree species include Fremont cottonwood, California sycamore, valley oak, white alder, boxelder, and Oregon ash. Common shrubs include wild grape, wild rose, California blackberry, blue elderberry, poison oak, buttonbrush, and willows. The herbaceous layer may include sedges, rushes, grasses, miner's lettuce, Douglas sagewort, poison hemlock, and hoary nettle. All valley foothill riparian habitats have exceptionally high wildlife value. A large number of riparian obligate migratory birds forage and nest in the valley foothill riparian habitat type, as well as a long list of common and frequently observed birds, reptiles, amphibians, and mammals and numerous special-status species.

### ***Deciduous and Evergreen Forest***

Deciduous forests are composed of trees that lose their leaves in the winter. These include species such as the various California oaks and California buckeye. The interior live oak, which is not deciduous, is also found in deciduous forests. Valley oak woodlands are found in the Sacramento and San Joaquin Valleys and usually occur below elevations of 2,000 feet. The deciduous forest plant species often provide a substantial amount of food to associated animals. The forest itself also provides a large amount of habitat. Wildlife associated with deciduous forests includes a wide variety of birds, small rodents, deer, racoons, various insects, foxes, bobcats, black bears, or even wolves.

Some of the component species of the mixed evergreen forest include tanbark oak, madrone, douglas fir, California bay, bigleaf maple, canyon live oak, black oak, coast live oak, and California hazelnut. This forest is also filled with leafy trees and few conifers.

## **3.3.2 ENVIRONMENTAL CONSEQUENCES**

### ***No Action Alternative***

The No Action Alternative is the renewal of existing contracts as required by non-discretionary CVPIA provisions addressed in the CVPIA PEIS. The No Action Alternative would only continue, for an interim period, water deliveries that accommodate current land uses.

Environmental commitments in existence as a result of the existing and future BOs, including the

CVPIA biological opinion (Reclamation and Service 2000) would be met under the No Action Alternative, including continuation of ongoing species conservation programs.

Execution of interim renewal contracts would not involve construction of new facilities or installation of structures. Based on existing trends, caused by the implementation of regional projects, separate from the interim renewal contracts, that increase irrigation efficiency and utilization of reuse areas for the application of drainwater to salt tolerant plants in accordance with existing permits, Reclamation anticipates that drainage production from the study area during the interim period would continue to decrease, as would discharges to the San Joaquin River and would therefore cause no adverse affects to biological resources. The interim renewal contracts themselves do not require the continuance of those regional projects, which are undertaken under separate authorities.

Ongoing trends in irrigation methods are toward higher efficiency systems and related changes in cropping, generally away from row crops and toward permanent crops. Reclamation anticipates that those trends would continue under the No Action Alternative, because those trends are spurred in part by water shortages from the implementation of laws and regulations that reduced the quantity of CVP water available for delivery to the San Luis Unit. Therefore, species inhabiting orchards and other permanent crops would benefit and those preferring row crops would be adversely affected under the No Action Alternative, but over the short interim period, these changes are not likely to be substantial.

For irrigation, these trends are clear enough to support the conclusion that other economic considerations would outstrip the effects of tiered pricing for irrigation water under the No Action Alternative, so no effects on biological resources is expected from its implementation.

With regard to M&I development, the short term of the contracts does not provide the long-term water supply required for conversions from agriculture to M&I uses. Tiered pricing under San Luis Unit M&I interim renewal contracts has the potential to cause additional conservation or to limit development within the service areas of cities with San Luis Unit contract. Lack of new development would not, itself, affect species and habitats.

For these reasons, the No Action Alternative would not result in substantial changes in natural and semi-natural communities and other land uses that have the potential to occur within study area and other portions of the San Luis Unit. The area of use and types of use are expected to fall within the historic ranges. As a result, the No-Action Alternative would not result in adverse effects on fish, vegetation, or wildlife resources located in the study area and other portions of the San Luis Unit.

### ***Proposed Action***

Given the hardening of demand that has already occurred in response to chronic shortages in CVP contract supplies, and ongoing trends toward increased irrigation efficiency and economic factors apart from the contract that influence crop selection, the lack of tiered pricing in the Proposed Action is unlikely to have any effect on water application for irrigation within the study area. In all other aspects, the effects of the proposed contract are substantially similar to those under the No-Action Alternative, so the Proposed Action would not result in substantial changes in natural and semi-natural communities and other land uses that have the potential to occur within the study area and other portions of the San Luis Unit.

Reclamation has determined that there would be no effects to species and critical habitats under the jurisdiction of NMFS within the service areas. Reclamation impacts to salmonid species and green sturgeon are solely the result of CVP operations, and are being addressed in the OCAP reconsultation currently underway. Effects to species and critical habitats under the jurisdiction of USFWS within the service areas would be addressed in the Biological Opinion issued by that agency to Reclamation before the interim contracts are signed. Such effects include loss of habitat and reduced habitat values, resulting from ongoing trends within the Valley.

### ***Cumulative Effects***

Interim renewal contract, when added to other past, present, and reasonably foreseeable future actions, represent a continuation of existing conditions which are unlikely to result in cumulative impacts on the biological resources of the study area and other portions of the San Luis Unit. Interim renewal contracts obligate the delivery of the same contractual amount of water to the same lands without the need for additional facility modifications or construction. As discussed in other sections of this environmental assessment, through local and on-farm activities, through the implementation of regional projects that increase irrigation efficiency and continued use of reuse areas for the application of drainwater to salt tolerant plants in accordance with existing permits, Reclamation expects that drainage production within the study area during the interim period would continue to be reduced, as would discharges to the San Joaquin River decreased. Thus, the interim renewal contracts, together with reasonably foreseeable future actions, would not incrementally contribute to any physical impacts to study area biological resources.

Also, interim renewal contracts would occur within the context of implementation of the Central Valley Project Improvement Act by the United States Department of the Interior, including Reclamation and Fish & Wildlife Service. Reclamation and the Fish & Wildlife Service explained the CVPIA in a report entitled “CVPIA, 10 Years of Progress”, as follows:

The CVPIA has redefined the purposes of the CVP to include the protection, restoration, and enhancement of fish, wildlife, and associated habitats; and to

contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin River Delta Estuary. Overall, the CVPIA seeks to "achieve a reasonable balance among competing demands for use of [CVP] water, including the requirements of fish and wildlife, and agricultural, municipal and industrial, and power contractors."

Finally, as explained above, interim renewal contracts would be subject to regulatory constraints imposed pursuant to Section 7 of the ESA, regardless of whether those constraints exist today.

## **3.4 Cultural Resources**

### **3.4.1 Affected Environment**

Renewal of the interim water service contracts between Reclamation and the San Luis Unit contractors constitutes an "undertaking" under the 36 CFR Part 800 regulations. The potential for impacts to cultural resources must be considered in this EA, in compliance with a number of federal rules and regulations.

For cultural resources, the area of potential effect of the undertaking consists of the contract service areas for the San Luis Unit contractors. Their service areas, which are described in Section 3.1, Contractor Service Area Descriptions, incorporate extensive areas along the western portion of the San Joaquin Valley and the interface between the valley and the lower reaches (eastern margin) of the Diablo Range and the northernmost portion of the Temblor Range of the Central Coast Ranges.

The San Luis Unit study area is nearly coterminous with lands claimed by the Penutian-speaking Northern Valley Yokuts (Wallace 1978a) and the Southern Valley Yokuts (Wallace 1978b; Kroeber 1925) at the time of initial contact with European-American populations circa AD 1850. These peoples occupied an area extending from the crest of the Coast Diablo and Temblor Ranges easterly into the foothills of the Sierra Nevada, north to the American River in the case of the Northern Valley Yokuts, and south to Buena Vista and Kern Lakes at the southernmost end of the Great Central Valley in the case of the Southern Valley Yokuts.

Interior California was initially visited by Anglo-American fur trappers, Russian scientists, and Spanish-Mexican expeditions during the early part of the nineteenth century. These early explorations were followed by a rapid escalation of European-American activities, which culminated in the massive influx fostered by the discovery of gold at Coloma in 1848. The influx of miners and others during the gold rush set in motion a series of major changes to California's natural and cultural landscape that would never be reversed.

Early Spanish expeditions arrived from Bay Area missions as early as 1804, penetrating the northwestern San Joaquin Valley (Cook 1976). By the mid-1820s, hundreds of fur trappers were



annually traversing the valley on behalf of the Hudson's Bay Company (Maloney 1945). By the late 1830s and early 1840s, several small permanent European-American settlements had emerged in the Central Valley and adjacent foothill lands, including ranchos in the interior Coast Range.

With the discovery of gold in the Sierra Nevada, large numbers of European-Americans, Hispanics, and Chinese arrived in and traveled through the Central Valley. The mining communities' demand for hard commodities led quickly to the expansion of ranching and agriculture throughout the Central Valley and logging within the foothill and higher elevation zones of the Sierra Nevada. Stable, larger populations arose and permanent communities slowly emerged in the Central Valley, particularly along major transportation corridors. Of particular importance was the transformation brought about by the construction of railroad lines.

The Southern Pacific and Central Pacific Railroads and a host of smaller interurban lines to the north around the cities of Stockton and Sacramento began intensive projects in the late 1860s. By the turn of the century, nearly 3,000 miles of rail lines connected the cities of Modesto and Stockton with points south and north. Many cities in the Central Valley were laid out as isolated railroad towns in the 1870s and 1880s by the Southern Pacific Railroad, which not only built and settled, but continued to nurture the infant cities until settlement was successful. The Southern Pacific Railroad main line traverses the Central Valley a short distance east of the San Luis Unit study area.

Dry-farming practices predominated during the early years until the 1880s when large-scale diversions of water from the San Joaquin River and its tributaries began. By the turn of the century, more than 350,000 acres were being irrigated across the San Joaquin Valley. New pump technology in the 1920s allowed more groundwater to be used. Valuable crops, such as vegetables, fruits, and nuts, were grown. New farming techniques allowed for leveling for irrigation on a scale never before possible. As a result, prior to delivery of CVP water, much of the land within the San Luis Unit was in agricultural production. These practices had devastating results to the region's prehistoric sites and very few remained undisturbed. It is these conditions that characterize portions of the study area today.

The construction of the CVP in the mid-1900s drastically changed the hydrology of the San Joaquin River by diverting most of the river's flows at Friant Dam. The construction of the west-side canals to offset the Friant diversions led to the further development of irrigated agriculture.

Intensive agricultural development soon followed, since railroads provided the means for product to be transported to a much larger market. By the end of the twentieth century, a substantial portion of the valley had been converted from native habitat and was being intensively

cultivated, with increasing mechanization through all of the twentieth century and substantial expansion of cultivated acreage with the arrival of water from the CVP.

A total of 67 archaeological and historic sites are currently documented within the contract service areas of the San Luis Unit contractors. These include sites that contain exclusively prehistoric material, sites with only historic material, sites with mixed prehistoric and historic components, and structures.

Table 3.1 summarizes the current cultural resources inventory by contractor. The table also provides a conclusion as to whether the service area is known or, if subjected to formal archaeological survey, would be likely to be discovered to contain important prehistoric or historic sites or other cultural features. This conclusion or assessment is based on (a) the results of the formal records search, (b) previous consultation with Native American groups and historical societies as summarized in existing archaeological reports and other documents, (c) the results of prior surveys in the general or immediate vicinity, and (d) an assessment of archaeological sensitivity based on stream courses and other critical variables present within unsurveyed contractor service areas.

**Table 3.1**  
**Summary of Previous Studies and Cultural Properties**

San Luis Unit Contractor	Recorded Sites or Landmarks	Percentage Surveyed to Date	Are Undocumented Sites Likely To Be Present in Service Area?
City of Avenal	25	9%	Yes
City of Coalinga	0	1%	Yes
City of Huron	0	0%	Yes
Pacheco Water District	12	5%	Yes
Panoche Water District	0	12%	Yes
San Luis Water District	28	5%	Yes
Westlands Water District	2	2%	Yes
<b>Total</b>	<b>67</b>		

### 3.4.2 Environmental Consequences

#### ***No Action***

The No Action Alternative would not result in substantial changes in reservoir elevations, or the construction of any new facilities. The area of use, types of use, range of river flows, and range of reservoir fluctuations fall within the historic ranges.

Contract provisions under the No Action Alternative stipulate the implementation of a tiered pricing structure (80/10/10 tiered pricing.) This pricing structure is unlikely to result in anything more than minimal changes in agricultural land uses, such as land fallowing. The types of changes in agricultural practices likely to occur in this situation, such as land fallowing, could

benefit cultural resources by not disturbing potential sites. The No Action Alternative would not result in any measureable changes in land use, which could in turn beneficially affect cultural resources.

### ***Proposed Action***

Impacts to cultural resources associated with the Proposed Action would be comparable to those described under the No Action Alternative. No impacts to cultural resources are expected. The proposed action would not result in any changes in water delivery or in the construction of new delivery systems. The Proposed Action does not include any contract provisions that would result in “on-the-ground” changes are proposed by this contract renewal. Given the lack of any possible impacts as a result of the proposed action, Reclamation concludes that there is no potential to affect historic properties.

### ***Cumulative Effects***

Since there are no impacts to cultural resources due to the alternatives, there would be no cumulative effects to cultural resources.

## **3.5 Recreation**

### **3.5.1 Affected Environment**

Recreation sites that could be assumed to be affected by the interim renewal of water service contracts include San Luis Reservoir, Los Banos Reservoir, Little Panoche Reservoir, the O’Neill Forebay, San Luis Canal, the San Joaquin River, and the wildlife refuges located near the San Luis Unit.

### ***Reservoirs***

San Luis Reservoir, the adjacent O’Neill Forebay, and Los Banos and Little Panoche Reservoirs provide reservoir-related recreational resources in or near the study area. San Luis Reservoir and the O’Neill Forebay are located west of Interstate 5 near State Route 152. Los Banos Reservoir is located southwest of the town of Los Banos and Little Panoche Reservoir is located south of Los Banos. Visitor attendance to the San Luis Reservoir State Recreation Area in fiscal year 2001 and 2002 was 514,096 [California Department of Parks and Recreation (CDPR) 2004]. This included 469,478 day-users and 44,618 campers.

### ***San Luis Reservoir***

When full, San Luis Reservoir covers approximately 12,700 surface acres. Recreational activities include boating,



**San Luis Reservoir**  
Source: U.S. Bureau of Reclamation

water-skiing, fishing, picnicking, camping, hunting, and hiking. Reservoir facilities consist of one campground and two concrete boat ramps and boarding docks. The reservoir has no designated swimming or lakeside beach areas. Boat and shore fishing occur throughout San Luis Reservoir. Migratory waterfowl hunting is permitted on most of the reservoir. Hunting for deer and wild pig is also allowed on the northwest shoreline of the San Luis Reservoir State Recreation Area.

Water-enhanced activities account for the largest portion of reservoir use. Relaxing and camping are the most popular of the water-related activities. About three-fourths of the annual use occurs between April and September. The majority of visitors are from the Bay-Delta (38 percent) or San Joaquin Valley areas (27 percent) (DWR 1987).

### ***Pacheco State Park***

Pacheco State Park is adjacent to the San Luis Reservoir to the west. It has beautiful displays of spring wildflowers, scenic vistas, and excellent hiking, mountain biking, and horse trails. The 28 miles of designated trails offers several loop options to give visitors the choice of a hike or ride from one to 20 miles or more. Pacheco State Park is home to tule elk, deer, bobcat, coyote, fox, hawks, eagles, and a variety of smaller animals. Among the historic features of the park are an old line shack used by Henry Miller's cattle company in the late 1800s and part of the old Butterfield stage line route.

### ***Los Banos Dam and Reservoir***

Los Banos Dam and Reservoir are on Los Banos Creek above the San Luis Canal, approximately seven miles southwest of the City of Los Banos in Merced County. The reservoir has a capacity of 34,600 af. The main purpose of the detention dam is to protect the canal from damaging floods caused by runoff from the Los Banos Creek watershed. The reservoir has 620 water surface acres and 12 miles of shoreline. The recreation area offers trails following the Path of the Padres, a boat and hiking trail. The path leads to the baths used by the padres of early California. During the spring, guided interpretive tours are provided on the trail. The reservoir offers day-use facilities for picnicking and family activities. Fishing opportunities are available, and the reservoir is stocked during the fall and winter months with trout. A horse camp is available and there are equestrian trails for the horse enthusiast.

### ***Little Panoche Reservoir***

The Little Panoche Reservoir has a capacity of 5,580 af. Its limited recreational facilities are considered undeveloped, but allow camping and hunting.

### ***O'Neill Forebay***

The O'Neill Forebay is located immediately east of San Luis Reservoir and 2.5 miles downstream of the San Luis Dam. It covers about 2,250 surface acres when full. It was

developed in part to accommodate recreational use that may be lost when San Luis Reservoir is drawn down. The majority of visits occur between April and September.

Recreational facilities consist of two boat ramps, two picnic areas, a campground, and a swimming area. Forebay recreational features also include the Medeiros recreation area, which provides picnicking, camping, and boat ramp access, and the San Luis Creek day-use area, which provides picnicking, swimming, and boat ramp access. Facilities accommodate boating, fishing, swimming, wading, camping, and sightseeing. In addition, the O'Neill Forebay is nationally known for windsurfing.

### ***San Luis Canal***

Fishing access is provided along 343 miles of the 444-mile-long San Luis Canal. Most of the 279-mile portion of the San Luis Canal that passes through the San Joaquin River Region is accessible for fishing. In this area, 12 fishing access sites provide parking areas and toilet facilities. The majority of the fishing occurs along the access roads running alongside the canal, away from designated fishing sites. No water-dependent uses other than fishing are allowed.



**San Luis Canal**  
Source: California Department  
of Water Resources

## **3.5.2 Environmental Consequences**

### ***No Action Alternative***

As discussed above, no changes in CVP reservoir storage or modifications in the amount or timing of water deliveries, which could affect recreational resources, would occur under the No Action Alternative. Therefore, no impacts to recreational resources are anticipated.

***Proposed Action***

Impacts to recreational resources associated with the Proposed Action would be comparable to those described under No Action Alternative.

***Cumulative Effects***

There would be no cumulative effects to recreational resources.

## **3.6 Indian Trust Assets**

### **3.6.1 Affected Environment**

Indian trust assets (ITAs) are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individual Indians. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITAs cannot be sold, leased or otherwise alienated without United States’ approval. ITAs may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITAs may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITAs reserved by Indian tribes, or individual Indians by treaty, statute, or Executive Order.

### **3.6.2 Environmental Consequences**

***No Action Alternative***

Under the No Action Alternative, continuous delivery of project water to existing contractors would not affect any Indian Trust Assets (ITA). Existing rights would not be affected, no physical changes to existing facilities are proposed and no new facilities are proposed.

***Proposed Action***

Impacts to ITA associated with the Proposed Action would be comparable to those described under the No Action Alternative.

### ***Cumulative Effects***

There would be no cumulative effects to ITAs.

## **3.7 Socio-economic Resources**

### **3.7.1 Affected Environment**

Agriculture is also a very important industry in the area surrounding the San Luis Unit. If taken together, the farm and agricultural services sectors are important to all three counties.

Agriculture takes on additional significance because it is generally considered a “primary” industry (along with mining and manufacturing). A reasonably large portion of activity in non-primary industries can be attributed to support for primary industry activity in an area. Changes in primary industry activity, therefore, usually precipitate additional changes in non-primary or support industries.

**Table 3.2**  
**1998 Total Earnings by Industry by County<sup>1</sup>**  
(thousands of dollars)

Industry	County		
	Merced	Fresno	Kings
Farm Income <sup>2</sup>	\$317,439	\$554,061	\$97,808
<b>Total</b>	<b>\$2,178,502</b>	<b>\$10,645,485</b>	<b>\$1,330,634</b>
<b>Farm Income as Percent of TOTAL</b>	<b>14.6%</b>	<b>5.2%</b>	<b>7.4%</b>
Source: U.S. Department of Commerce 1998a			
<sup>2</sup> Farm income consists of proprietors' income; the cash wages, pay-in-kind, and other labor income of hired farm workers; and the salaries of officers of corporate farms.			

Table 3.3 shows the estimated and projected population and ethnicity in the San Luis Unit service area. As shown in Table 3.3, the Hispanic community makes up a large proportion of the regional population. It is estimated that over 63 percent of the regional population was identified as Hispanic in 2000 and that the percentage will rise to over 76 percent by 2025. These trends are expected to continue through the term of the interim renewal contracts.

**Table 3.3**  
**Population and Ethnicity-San Luis Unit Study Area<sup>1</sup>**

Year	Population				Total <sup>3</sup>
	White	Black	Other	Hispanic <sup>2</sup>	
1990	27,275	4,842	27,908	34,453	60,025
1995	28,754	5,551	35,983	40,754	67,253
2000	29,639	6,498	41,628	46,428	73,174
2005	30,862	7,241	48,940	52,923	80,257
2010	32,003	8,079	56,382	60,010	87,702
2015	33,015	9,054	63,309	67,309	95,193
2020	34,080	9,930	71,950	76,697	104,231
2026	35,078	10,809	80,993	86,896	113,820

Source: U.S. Census Bureau 1990

<sup>1</sup>Estimated and extrapolated from aggregated census tract data.

<sup>2</sup>Hispanic population is also counted as White, Black, or Other.

<sup>3</sup>Equals the sum of White, Black, and Other.

### 3.7.2 Environmental Consequences

#### ***No Action Alternative***

Contract provisions under the No Action Alternative which stipulate the water pricing structure (80/10/10 tiered pricing) would place an additional financial burden on water contractors including the water supplies of three San Luis cities. Because the economy of the Central Valley is heavily dependent on these water supplies, this increased burden, despite the short duration of the renewal and limited circumstances when tiered pricing increases rates, may translate into economic impacts throughout the affected area.

While contractors would likely receive the same quantity of water under the No Action Alternative, the tiered pricing structure stipulated in the contract would result in higher water prices for both agricultural and M&I contractors when second or third tier water is provided. The increased cost of water resulting from provisions under the No Action Alternative would increase the cost of water. Local and regional economies would be directly affected as a result of losses in farming revenues, decreased value of land dependent on water supplies increased costs to consumers of agricultural products or M&I water, and increased water conservation or measurement costs. It may also put additional pressures on low income households to pay for water supplies at higher rates. The cities report that current water prices are affecting their customer's ability to pay municipal water costs. Although there is a potential for these effects to occur, considering the short duration of the 26 months of the contract renewal period, and the low frequency of allocations above 80%, no effects to socio-economic resources are expected over the scope of this project related to tiered pricing contract provisions.



Historic water deliveries and CVP facility operations would continue under the No Action Alternative. No changes in power generation, recreational opportunities, or agricultural economics are expected. Thus, no economic impacts are anticipated to occur under the period of renewal.

### ***Proposed Action***

Potential socio-economic impacts associated with the Proposed Action would be comparable to those described under No Action Alternative however under the Proposed Action there is no potential for effects to occur due to tiered pricing. Thus, renewal of the interim contracts with only minor administrative changes to the contract provisions would not result in a change in contract water quantities or a change in water use.

### ***Cumulative Effects***

Since there would be no effect of the proposed action, there would be no cumulative effects to socio-economic resources.

## **3.8 Environmental Justice**

### **3.8.1 Affected Environment**

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. Some information relating to the socio-economic stratification of the San Luis unit can be found above. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America. The population of some small communities typically increases during late summer harvest.

### **3.8.2 Environmental Consequences**

#### ***No Action Alternative***

Contract provisions under the No Action Alternative include the tiered pricing structure (80/10/10 tiered pricing.) Implementation could, but is not likely to result in changes in agricultural practices, including cropping patterns and land fallowing. It would, however, during the circumstances when tiered pricing increased rates apply, increase the cost of water, which could reduce farming revenues and decrease land values. M&I users would also be impacted by changes in water supply costs placing increased pressure on low income households.

Nevertheless, because this is a temporary action, and because the potential changes in water delivery and cost is expected to be within the normal range of variation, it is unlikely that significant changes in social well-being would occur under this alternative.

Reduced farming revenue and land values would be detrimental to farm workers, especially to migrant workers who tend to be from minority and low-income populations. This impact would

be attenuated by the short duration of the interim renewal contracts and the low likelihood of major shifts in agricultural production in a 26 month period. Additionally tiered pricing impacts occur only when allocations are above 80% which occurs infrequently. Any changes would likely be within the normal range of annual or seasonal variations. No significant disproportionate impacts to minority or low-income populations are expected.

Factors contributing to population change, employment, and income levels and unemployment rates in the affected area are closely tied to CVP water contracts through either agricultural or M&I dependence. Because no changes in water supplies or CVP operations would occur under this alternative, changes in population and the various indicators of social well-being that would result are expected to be relatively minor.

The No Action Alternative would support continued agricultural production and would not directly result in changes to employment of minority and low-income populations.

### ***Proposed Action***

Impacts to minority and disadvantaged populations associated with the Proposed Action would be comparable to those described under No Action Alternative. Renewal of the interim renewal contracts with only minor administrative changes to the contract provisions would not result in a change in contract water quantities or a change in water use. The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. There would be no changes to existing conditions. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts. Therefore, the Proposed Action would not differ from current conditions and would not be expected to disproportionately affect minority or low income populations.

### ***Cumulative Effects***

Since there would be no effect of the proposed action, there would be no cumulative effects to minority or disadvantaged populations.

## **Section 4 Consultation and Coordination**

### **4.1 Fish and Wildlife Coordination Act (16 USC 651 et seq.)**

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The implementation of the CVPIA, of which this action is a part, has been jointly analyzed by Reclamation and the FWS and is being jointly implemented. The Proposed Action does not involve construction projects, therefore the FWCA does not apply.

### **4.2 Endangered Species Act (16 USC 1521 et seq.)**

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

The Proposed Action would support existing uses and conditions. No native lands would be converted or cultivated with CVP water. The water would be delivered to existing homes or farmlands, through existing facilities, as has been done in the past, and would not be used for land conversion. Reclamation has determined that there would be no effects to species and critical habitats under the jurisdiction of NMFS within the service areas. Reclamation impacts to salmonid species and green sturgeon are solely the result of CVP operations, and are being addressed in the OCAP reconsultation currently underway. Effects to species and critical habitats under the jurisdiction of FWS within the service areas would be addressed in the Biological Opinion issued by that agency to Reclamation before the interim contracts are signed. Reclamation will complete consultation with the FWS prior to finalization of this EA.

### **4.3 National Historic Preservation Act (15 USC 470 et seq.)**

Section 106 of the National Historic Preservation Act requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological and cultural resources. Reclamation has made a determination that as the proposed action would result in no change in the water is conveyed or applied to the ground by this contract renewal and given the lack of any possible impacts as a result of the undertaking, Reclamation concludes that there is no potential to affect historic properties, pursuant to 36 CFR Part 800.3(a)(1). As described in the regulations, Reclamation has no further obligations under section 106.

#### **4.4 Migratory Bird Treaty Act (16 USC Sec. 703 et seq.)**

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior (Secretary) may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg would be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would have no effect on birds protected by the Migratory Bird Treaty Act.

#### **4.5 Executive Order 11988 – Floodplain Management and Executive Order 11990-Protection of Wetlands**

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The project would not affect either concern.

### **Section 5 List of Preparers and Reviewers**

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Laura Myers, Natural Resource Specialist, SCCAO

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Mike Kinsey, Biologist, SCCAO

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SAN LUIS UNIT

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DRAFT ENVIRONMENTAL ASSESSMENT

*INTERIM RENEWAL CONTRACT EA*

**Appendix A**  
**Draft Interim Renewal Contract**

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May 2007

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SAN LUIS UNIT

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DRAFT ENVIRONMENTAL ASSESSMENT

*INTERIM CONTRACT RENEWAL*

**Appendix B**

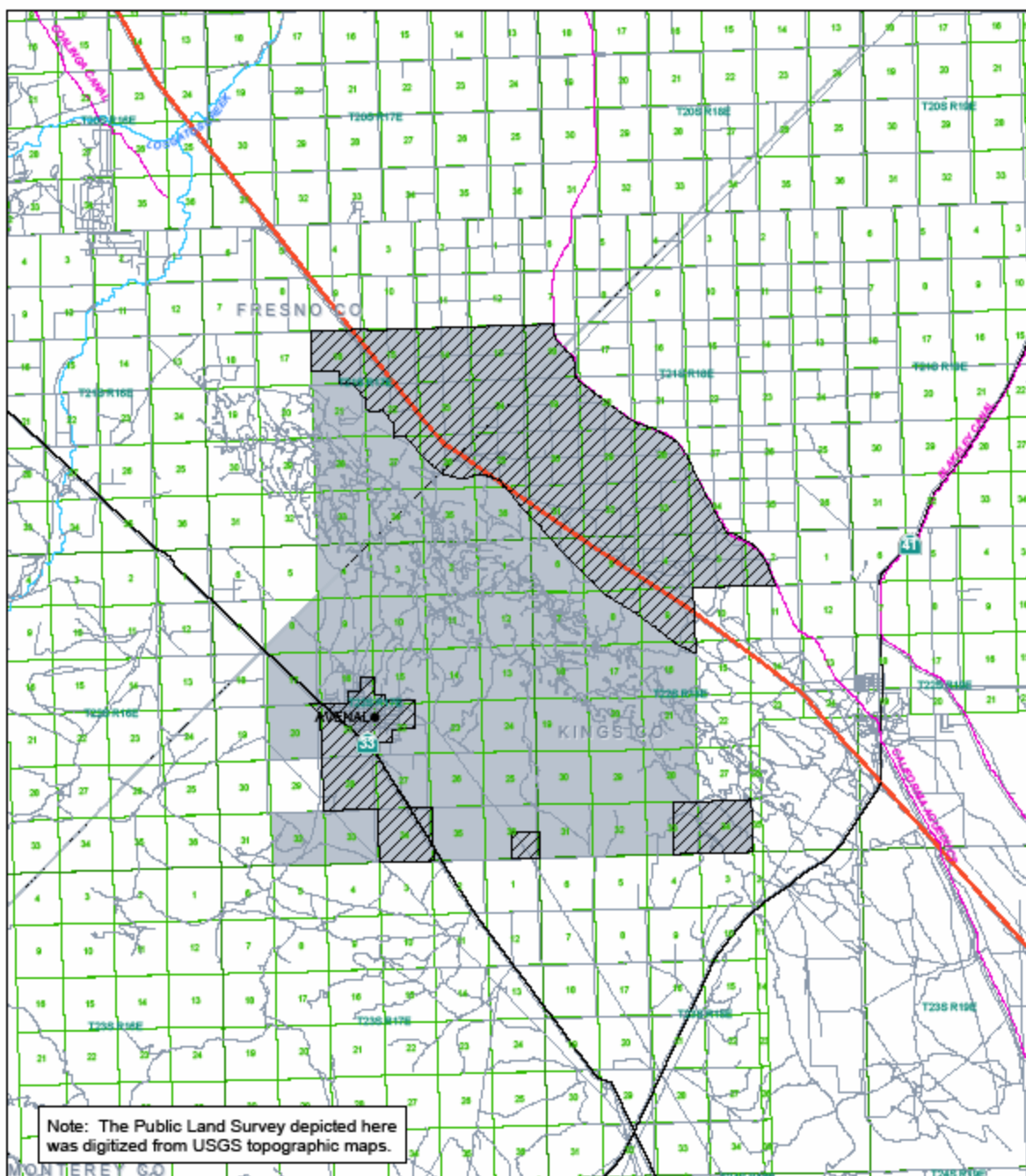
**Maps of San Luis Unit Contractor's Service Area Boundaries**

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May 2007

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## City of Avenal

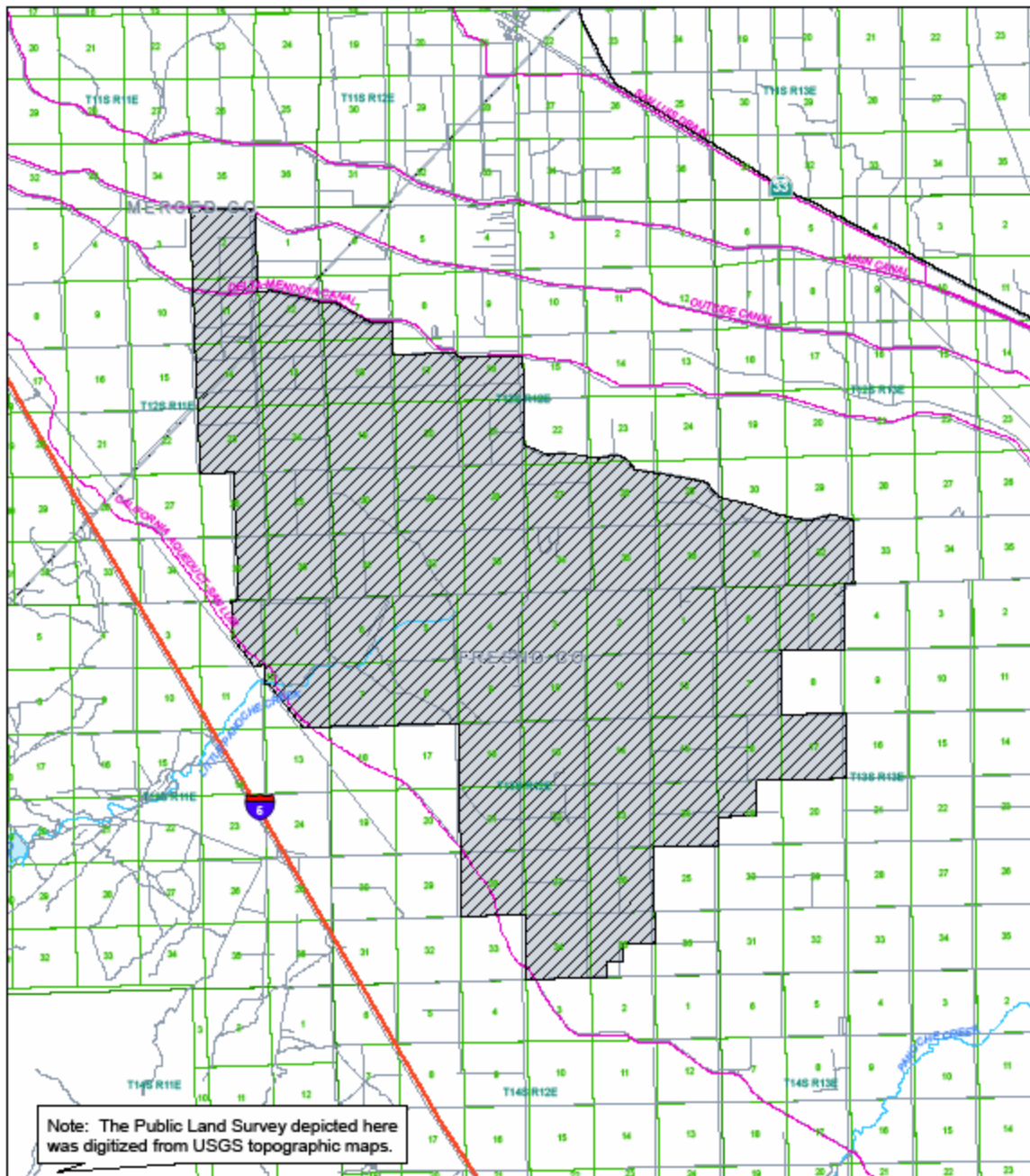
Contract No. 14-06-200-4619A-LTR1  
Exhibit A





Date: October 10, 2004  
File Name: H:\delrol\contract\city\_of\_avenal\city\_of\_avenal.mxd



805-202-4



Note: The Public Land Survey depicted here was digitized from USGS topographic maps.

-  Contractor's Service Area
-  District Boundary

## Panoche Water District

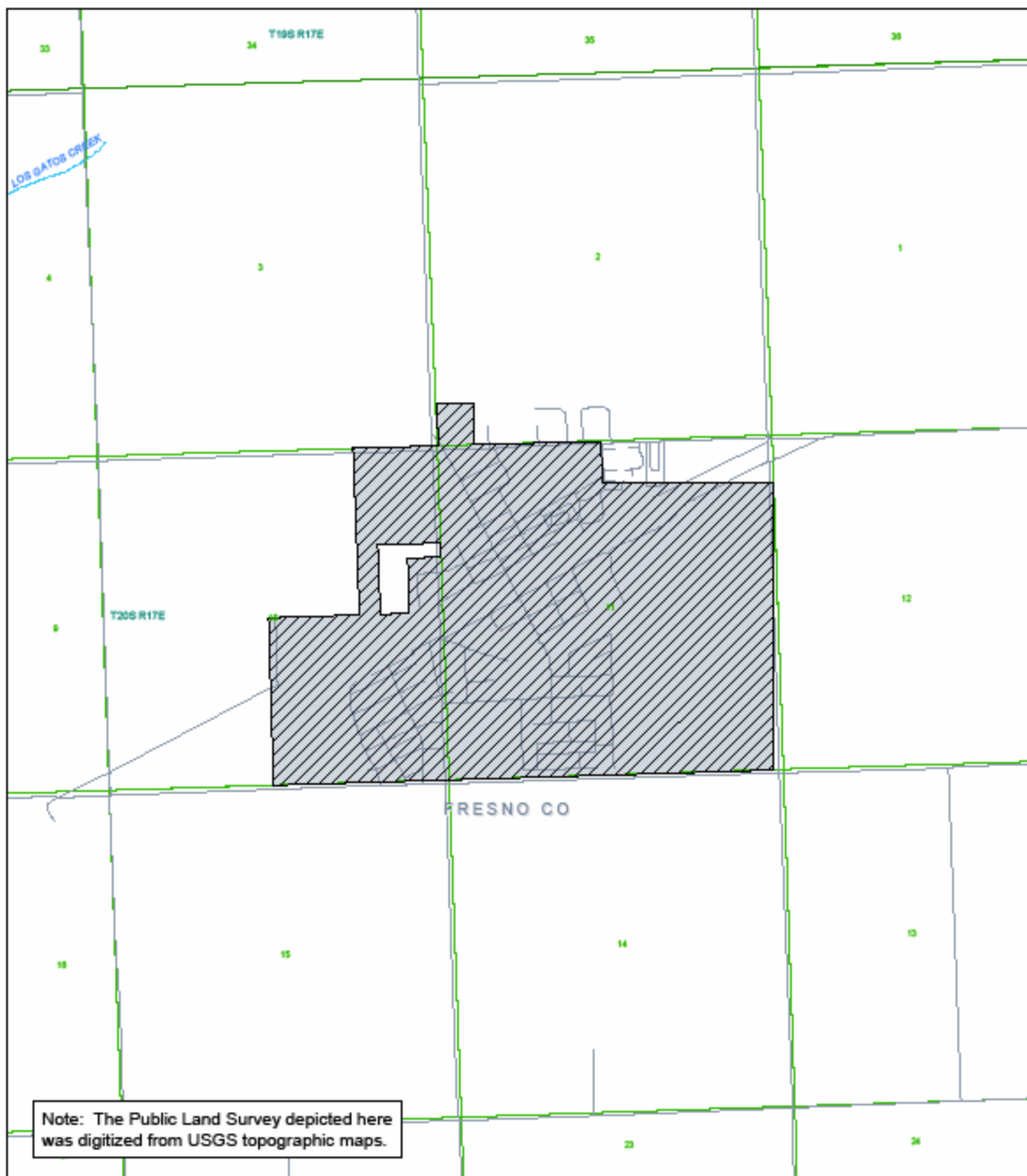
Contract No. 14-06-200-7864A-LTR1  
Exhibit A





Date: October 15, 2004  
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805-202-2





-  District Boundary
-  Contractor's Service Area

## City of Huron

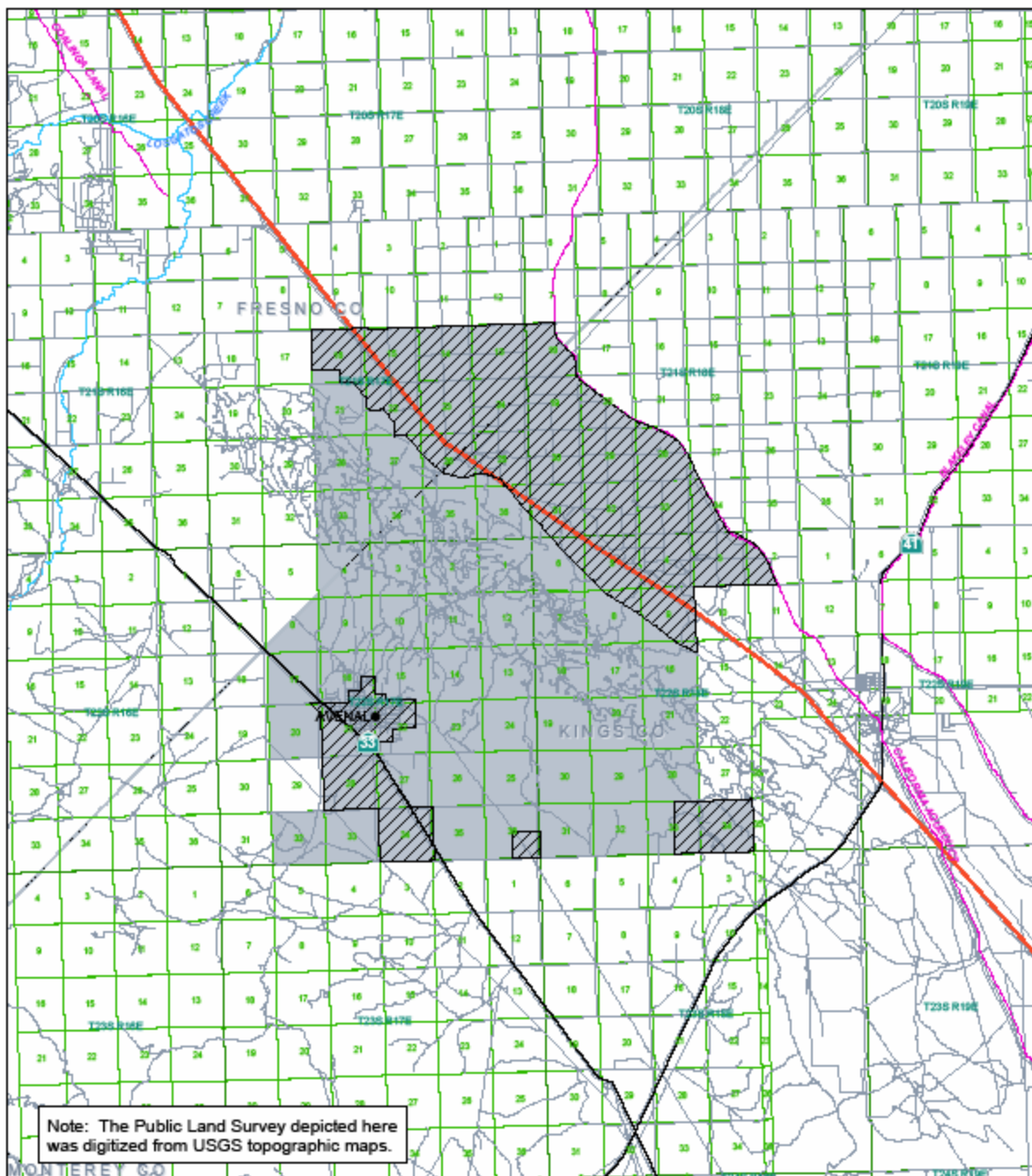
Contract No. 14-06-200-7081A-LTR1  
Exhibit A

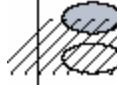
1 0.5 1 Miles



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805-202-6







District Boundary

Contractor's Service Area

## City of Avenal


Contract No. 14-06-200-4619A-LTR1

Exhibit A

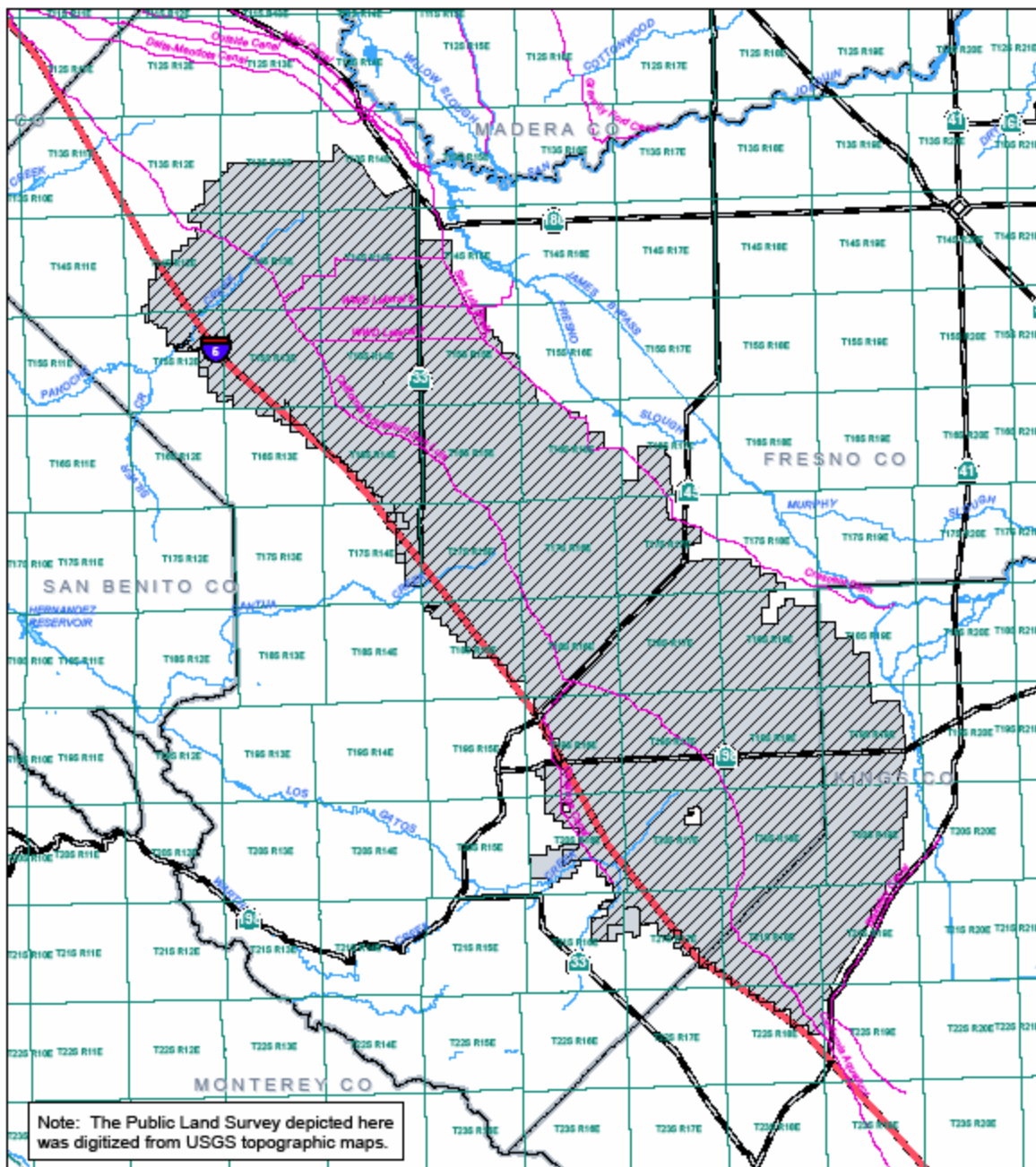
Date: October 15, 2004

File Name: N:\distinfo\contractinfo\_of\_averality\_of\_avenal.mxd



Miles



805-202-4



## Westlands Water District

Contract No. 14-06-200-495A-LTR1

Exhibit A

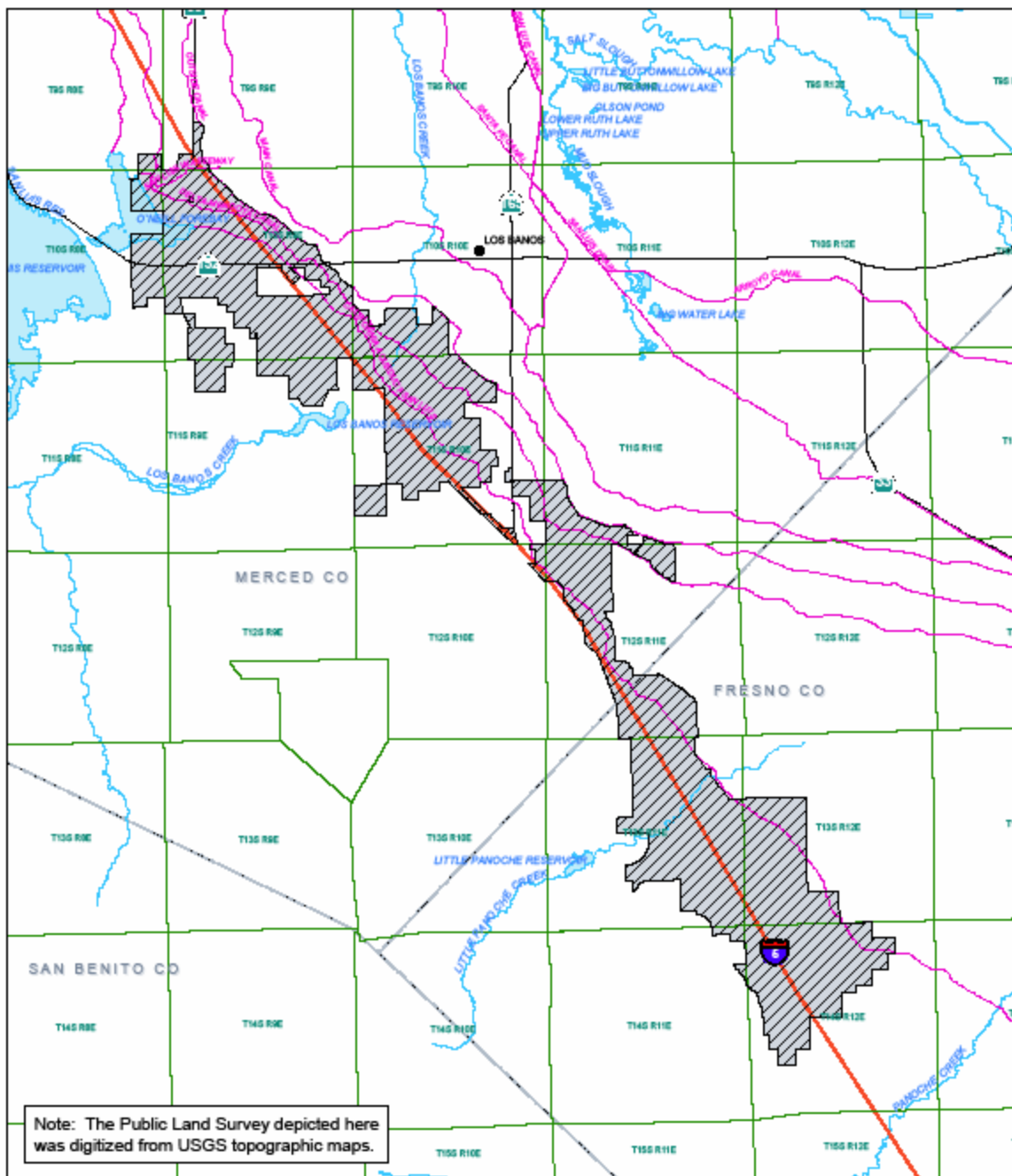
-  Contractor's Service Area
-  District Boundary

Date: October 18, 2004  
File Name: T:\distfiles\contract\westlands\westlands.mxd

0 5 10 Miles





805-202-7



## San Luis Water District

Contract No. 14-06-200-7773A-LTR1  
Exhibit A

-  Contractor's Service Area
-  District Boundary

Date: October 15, 2004  
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0 2.5 5 Miles



805-202-3

SAN LUIS UNIT

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DRAFT ENVIRONMENTAL ASSESSMENT

*INTERIM CONTRACT RENEWAL*

**Appendix C**  
**Threatened and Endangered Species List**

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May 2007

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**Federal Endangered and Threatened Species that Occur in  
or may be Affected by Projects in the Counties and/or  
U.S.G.S. 7 1/2 Minute Quads you requested**

*Document Number: 070521020847*

*Database Last Updated: March 5, 2007*

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**Quad Lists**

***Listed Species***

**Invertebrates**

- Branchinecta longiantenna
  - longhorn fairy shrimp (E)
- Branchinecta lynchi
  - vernal pool fairy shrimp (T)
- Desmocerus californicus dimorphus
  - valley elderberry longhorn beetle (T)
- Lepidurus packardii
  - vernal pool tadpole shrimp (E)

**Fish**

- Hypomesus transpacificus
  - delta smelt (T)
- Oncorhynchus mykiss
  - Central Valley steelhead (T) (NMFS)

**Amphibians**

- Ambystoma californiense
  - California tiger salamander, central population (T)
  - Critical habitat, CA tiger salamander, central population (X)
- Rana aurora draytonii
  - California red-legged frog (T)

## Reptiles

- *Gambelia* (=Crotaphytus) sila
  - blunt-nosed leopard lizard (E)
- *Thamnophis gigas*
  - giant garter snake (T)

## Birds

- *Gymnogyps californianus*
  - California condor (E)
- *Haliaeetus leucocephalus*
  - bald eagle (T)

## Mammals

- *Dipodomys ingens*
  - giant kangaroo rat (E)
- *Dipodomys nitratoides exilis*
  - Critical habitat, Fresno kangaroo rat (X)
  - Fresno kangaroo rat (E)
- *Dipodomys nitratoides nitratoides*
  - Tipton kangaroo rat (E)
- *Vulpes macrotis mutica*
  - San Joaquin kit fox (E)

## Plants

- *Caulanthus californicus*
  - California jewelflower (E)
- *Cordylanthus palmatus*
  - palmate-bracted bird's-beak (E)
- *Monolopia congdonii* (=Lembertia congdonii)
  - San Joaquin woolly-threads (E)



**Quads Containing Listed, Proposed or Candidate Species:**

KETTLEMAN PLAIN (291A)

GARZA PEAK (291B)

STRATFORD (313A)

WESTHAVEN (313B)

KETTLEMAN CITY (313C)

HURON (314A)

GUIJARRAL HILLS (314B)

AVENAL (314C)

LA CIMA (314D)

COALINGA (315A)

ALCALDE HILLS (315B)

CURRY MOUNTAIN (315C)

KREYENHAGEN HILLS (315D)

BURREL (336B)

VANGUARD (336C)

FIVE POINTS (337A)

WESTSIDE (337B)

HARRIS RANCH (337C)

CALFLAX (337D)

TRES PECOS FARMS (338A)

LILLIS RANCH (338B)

DOMENGINE RANCH (338D)

SAN JOAQUIN (359C)

HELM (359D)

TRANQUILLITY (360A)

COIT RANCH (360B)

LEVIS (360C)

CANTUA CREEK (360D)

CHANEY RANCH (361A)

CHOUNET RANCH (361B)

TUMEY HILLS (361C)

MONOCLINE RIDGE (361D)

FIREBAUGH (381C)

DOS PALOS (382B)

HAMMONDS RANCH (382C)

BROADVIEW FARMS (382D)

CHARLESTON SCHOOL (383A)

ORTIGALITA PEAK NW (383B)

LAGUNA SECA RANCH (383D)

LOS BANOS VALLEY (384A)

VOLTA (403C)

LOS BANOS (403D)

SAN LUIS DAM (404D)

SAN LUIS UNIT

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DRAFT ENVIRONMENTAL ASSESSMENT

*INTERIM CONTRACT RENEWAL*

**Appendix D**  
**Water Needs Assessments**

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May 2007

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Division: West San Joaquin

Water Needs Assessment

Date: 7/28/00

AVENAL, CITY OF

Timeframe	Contractor's Water Supply Sources and Quantities (acre-feet)									
	Surface Water Supply					Groundwater Supply				
	Reference Delivery	USBR Total Daily/Max	SWP	Local	Local Source	Infiltration	Private	Yield	Recharge	Total Supply
1995	3,500	2,432	4	5	8	7	8	11	12	2,432
1997 representative	3,500	2,432	0	0	0	0	0	0	0	2,432
2025	3,500	3,500	0	0	0	0	0	0	0	3,500

Contractor's Agricultural Water Demands									
Timeframe	District		Reference		Calculated		USBR Net		Total Ag Demand
	Crop Water Requirement	Irrigation Efficiency	Effective Precip	Effective Precip	Net Crop Water Req	Water Req	Crop Water Req	Irrigated Acres	
1995	15	15	17	19	18	20	21	22	25
1997									
2025									

Contractor's M&I Water Demands									
Timeframe	Residential Water Demand			Commercial/Industrial Demand			Total Demand		
	Population	Per Capita Demand	Total Demand	Population	Per Capita Demand	Total Demand	Population	Per Capita Demand	Total Demand
1995	6,495	106.1	772	33	33	1,300	1,300	1,333	328
1997	6,495	106.1	772	33	33	1,300	1,300	1,333	328
2025	12,000	97.2	1,306	57	57	2,143	2,143	2,200	385

**Notes:** Unaccounted beneficial use is added to distribution system loss; the total is shown under Distribution system loss.

\* Represents Maximum Contract Amount.

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching, and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years.

Quality control check; information is either calculated by USBR staff, or from reference.

## Agricultural and M&I Water Supply

## Contractor's Water Supply Sources and Quantities (acre-feet)

[illegible]

## Contractor's Agricultural Water Demands

Maximum Productive Acres= 34,538

[illegible]

## Contractor's M&I Water Demands

Transframe	Residential Water Demand			Nonresidential Water Demand			Less	Total MCA Demand (acre-feet)	Total Ag. MCA Demand (acre-feet)	Unmet Demand (acre-feet)
	Population	Per Capita Demand (gpd)	Total Demand (acre-feet)	Industrial (acre-feet)	Comm./Retail (acre-feet)	Total Demand (acre-feet)				
1986	14,990	257.3	4,321	0	0	0	0	4,321	38	0
1988	15,400	108.7	1,875	600	1,295	1,895	225	3,985	0	0
2025	27,000	278.6	8,455	0	0	0	0	8,455	8,455	-1,545

**Unfair—** Unaccounted beneficial uses are added to distribution system losses and shown under Distribution system loss.

**\* Represents Maximum Contract Amount**

WATER SAVING AND CLEANER DISINFECTION for a normal hygienic vessel. Over Water Treatment makes water hot and purified water but not in a fraction of an instant.

Information from contractor's website management plan or data submitted for National Vessel Documentation and Registration will be for a law enforcement agency, as of state records request received by the agency. (1888 reference information for National Vessel Documentation and Registration)

**Quality control checks:** Information is either requested by USDOJ or from regulatory

Division: West San Joaquin  
 Agricultural and M&I Water Supply  
 Water Needs Assessment  
 District:  
 HURON, CITY OF  
 Date: 7/28/00

Timeframe	Contractor's Water Supply Sources and Quantities (acre-feet)									
	Surface Water Supply					Groundwater Supply				
	Reference Delivery	USBR Total Delivery/Max	SWP	Local	Local Sources	Transfer/Return /Recharge In	Water/Out	Recharge Private	Yield	Total Supply
1996	3,000	982	4	5	6	7	8	9	11	982
2025	3,000	3,000	0	0	0	0	0	0	0	3,000

Contractor's Agricultural Water Demands									
Timeframe	District		Balance		USBR Net		Average		Maximum Productive Acres
	Crop Water Requirement	Irrig. Efficiency	Effective Precip	Net Crop Water Req	Crop Water Req	Irrigated Acres	Irrigated Acres	Scheduled FUR	Total Ag Demand
1996	15	8	17	18	20	21	22	23	26
2025	0	0	0	0	0	0	0	0	0

Contractor's M&I Water Demands									
Timeframe	Per Capita Demand		Industrial Demand		Total Demand		Per Capita Demand		Total Demand
	Population	Per Capita Demand (gpd)	Industrial Demand (acre-feet)	Commercial/Institutional Demand (acre-feet)	Total Demand (acre-feet)	Per Capita Demand (gpd)	Per Capita Demand (acre-feet)	Total Demand (acre-feet)	Unmet Demand (acre-feet)
1996	5,808	75.9	311	114	425	311.0	156.3	982	0
2025	12,810	76.0	710	260	970	143.6	2,060	2,060	-940

Notes: Unaccounted beneficial use is totaled with the distribution system loss. The total for both is shown under distribution system loss.  
 \* Represents Maximum Contract Amount  
 Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.  
☐ Information from contractor's water management plan or data submitted for the listed years. USBR reference information for future years  
☐ Quality control check; information is either calculated by USBR staff, or from reference.

Division: Delta

Water Needs Assessment

Metrol

Date: 7/28/00

# Agricultural and M&I Water Supply

SAN LUIS WD-DMC

## Contractor's Water Supply Sources and Quantities (acre-feet)

Transverse	Surface Water Supply				Groundwater Supply				Total Supply
	Reference Delivery	USBR Total Daily/Max	SWP	Local	Local Sources	Trailer/Return	Trailer/Return	Trailer/Return	
1	2	3	4	5	6	7	8	9	10
1989 WC Plan	120,261	106,092	0	0	0	13,038	1,864	0	127,265
1998 WC Plan	125,080	70,409	0	0	0	4,458	2,894	0	81,973
2025	125,080	125,080	0	0	0	0	2,894	0	127,188

Maximum Productive Acres= 50,463

## Contractor's Agricultural Water Demands

Transverse	Crop Water Requirement (acre-feet)	District Irrig. Efficiency (%)	Effective Precip. (acre-feet)	Reference Effective Precip. (acre-ft)	Calculated Net Crop Water Req. (acre-feet)	USBR Net Crop Water Req. (acre-feet)	Average Irrigated Acres (actual)	Reference Irrigated Acres (actual)	Calculated FIB (AE/acre)	USBR FIB (AE/acre)	Conveyance Loss (acre-feet)	Total Ag Demand (acre-feet)
1	15	80	7	18	19	20	21	22	23	24	25	26
1989	128,994	75	9,289	13,385	159,607	129,399	44,764	44,617	3.57	2.90	442	160,049
1998	104,656	75	33,107		95,399		47,924		1.98		1,906	97,305
2025	112,883	85	13,050	13,050	117,450	117,450	43,500	43,500	2.70	2.70	1,906	119,356



Division: West San Joaquin  
 Agricultural and M&I Water Supply  
 Water Needs Assessment  
 Date: 7/28/00  
 PANOCHE WD-DMC

Timeframe	Contractor's Water Supply				Contractor's Water Demand				Contractor's Water Supply				Total Supply
	Reference Delivery	USBR Total Daily/Max	SWP	Local	Local Sources /Reservoir	Tran/Altra	Tran/Altra	Tran/Altra	Desert	Private	Safe Yield	Reservoir	
1989	86,081	91,887	0	0	0	1,792	42	0	0	0	0	0	93,637
2025	94,000	94,000	0	0	0	0	48	0	0	0	0	0	93,952

Contractor's Agricultural Water Demands														Maximum Productive Acres= 35,786	
Timeframe	Crop Water Requirement (acre-feet)	District Irrig. Efficiency (%)	Effective Precip (acre-feet)	Reference Effective Precip (acre-ft)	Calculated Net Crop Water Req (acre-feet)	USBR Net Crop Water Req (acre-feet)	Average Irrigated Acres (acres)	Reference Irrigated Acres (acres)	Calculated FRR (AF/acre)	USBR FRR (AF/acre)	Conveyance Loss (acre-feet)	Total Ag Demand (acre-feet)	Total Ag Demand (acre-feet)		
1989	80,707	75	6,555	10,676	99,869	99,869	35,661	35,586	2.77	2.80	7,903	106,772	106,772		
2025	85,916	85	11,430	11,430	87,630	87,630	38,100	38,100	2.30	2.30	5,186	92,816	92,816		

Contractor's M&I Water Demands															
Timeframe	Population	Per Capita Demand (gpd)	Total Demand (acre-feet)	Industrial Demand (acre-feet)	Commercial Demand (acre-feet)	Total Demand (acre-feet)	Losses (acre-feet)	Net Demand (acre-feet)	Per Capita Demand (gpd)	Total Demand (acre-feet)	Conveyance Loss (acre-feet)	Total Demand (acre-feet)	Total Demand (acre-feet)		
1989	28	28	30	31	32	33	34	35	35	36	37	38	38		
2025															

Notes: In 1989 and 2025, USBR total supply includes 42 & 48 AF M&I; these supplies are shown as transfers out to make this solely an assessment of ag water need.

\* Represents Maximum Contingent Amount  
 Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.  
 Information from contractor's water management plan or data submitted for historical years. USBR references information for future years  
 Quality control check; information is either calculated by USBR staff, or from references.

Division: **West San Joaquin**

## Water Needs Assessment

**附錄**

**Market**  
**WESTLANDS WD**

Date: 7/28/00

## Agricultural and M&I Water Supply

### Contractor's Water Supply Sources and Quantities (acre-feet)

Contractor's Water Supply Sources and Quantities (2018-2025)												
Timeframe	Surface Water Supply							Groundwater Supply				
	Reference Delivery	USBR Total Duty/Max	SWP	Local	Local Source	Transfer/Return /Reservoir In	Transfer/ Out	District	Private	Yield	Safe Reservoirs	Total Supply
1989	1,062,509	1,130,463	0	0	0	32,665	5,420	0	175,000	0	0	1,332,908
2025	1,150,000 *	1,150,000 *	0	0	0	0	4,938	0	175,000	0	0	1,320,062

Maximum Productive Acres= 545,268

## Contractor's Agricultural Water Demands

Timeframe	Crop Water Requirement (acre-feet)	District Irrig. Efficiency (%)	Effective Precip (acre-feet)	Reference	Calculated	USBR Est.	Average	Reference	Calculated	USBR FR	Conveyance Loss	Total Ag Demand (acre-feet)
				Effective Precip (acre-ft)	Net Crop Water Req (acre-feet)	Crop Water Req (acre-feet)	Irrigated Acres (acres)	Irrigated Acres (acres)	FR (AF/acre)	Loss (acre-feet)		
1989	1,150,448	75	65,249	155,765	1,446,933	1,401,893	515,000	519,216	2.81	2.70	319	1,447,252
2025	1,366,756	85	181,830	181,830	1,394,030	1,394,030	606,100	606,100	2.30	2.10	319	1,394,349

## Contractor's M&I Water Demands

Thiruvananthapuram	Residential Water Demand				Nonresidential Water Demand				Loss		Total				Unmet Demand (acre-feet)	Total (acre-feet)	Avg. MCI Demand (acre-feet)	Unmet Demand (acre-feet)
	Population	Per Capita Demand (gpd)	Total Demand (acre-feet)	Industrial Demand (acre-feet)	Commercial/Institutional Demand (acre-feet)	Total Demand (acre-feet)	Leakage (acre-feet)	Total Demand (acre-feet)	Per Capita Demand (gpd)	Total Demand (acre-feet)	Per Capita Demand (gpd)	Total Demand (acre-feet)						
1	28	28	30	31	32	33	34	35	36	37	38	39	114,344	74,287				
1989			0	0	0	0	0	0	0	0	1,447,252	1,394,348						
2025			0	0	0	0	0	0	0	0	1,394,348	74,287						

**Kulak.** In order to limit this to an assessment of agricultural water needs, M&I water in the amount of 5,420 AF in 1989 and 4,938 AF in 2025 are shown as transfers out.

\* Represents Maximum Contract Amount

**Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes losses from soil and cultural water but not irrigation efficiency.**

☐ Information from contractor's water management plan or data submitted for historical years. USBR reserves information for future years.

Quality control check: Information is either calculated by USBR staff, or from referenced

SAN LUIS UNIT

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DRAFT ENVIRONMENTAL ASSESSMENT

*INTERIM CONTRACT RENEWAL*

**Appendix E**

**San Luis Unit Interim Contract Renewal Biological Opinion**

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May 2007

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