

**Draft Program**

# **Environmental Impact Report for the Consolidated and Conformed Place of Use**

Prepared for:

**California State Water Resources Control Board  
Division of Water Rights  
P.O. Box 2000  
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Petitioner:

**U.S. Department of the Interior  
Bureau of Reclamation**

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**December 1997**



**Cal/EPA**

**State Water  
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**DECEMBER 11 1997**

TO INTERESTED PARTIES

**RELEASE OF DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT (PEIR)  
FOR THE U.S. BUREAU OF RECLAMATION PETITION TO CONSOLIDATE AND  
CONFORM THE PLACE OF USE FOR 16 OF ITS CENTRAL VALLEY PROJECT  
WATER RIGHT PERMITS**

Enclosed is a copy of the subject draft Program Environmental Impact Report (PEIR). The State Water Resources Control Board (SWRCB) has prepared the draft PEIR pursuant to the California Environmental Quality Act (CEQA) for the U.S. Bureau of Reclamation (Reclamation) petition to consolidate and conform 16 of the of its Central Valley Project (CVP) water right permits. Reclamation petitioned the SWRCB to make four changes to 16 of its water right permits issued by the SWRCB for operation of nine CVP facilities. The petitioned changes were to: (1) consolidate the CVP authorized place of use, (2) expand the authorized place of use, (3) conform the purposes of use, and (4) extend the time to complete full beneficial use of water under the permits. The time extension will be handled as a separate action by the SWRCB. The petition was noticed on July 29, 1986, and has become known as the Consolidated Place of Use (CPOU) petition. A water right hearing was noticed on December 2, 1997 for the SWRCB to consider this action. Copies of this notice can be obtained by calling Renee Frazier at (916) 657-1361. This draft EIR along with other evidence will be evaluated by the SWRCB in the preparation of a water right order. If you would like to participate in this water right hearing you should obtain a copy of the hearing notice.

Comments on the draft EIR must be received on or before 5:00 p.m. January 30, 1998. Comments should be addressed to:

Mike Falkenstein, Chief  
Environmental Section  
Division of Water Rights  
State Water Resources Control Board  
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They can be hand delivered to the same addressee at 901 P Street, Third Floor, Division of Water Rights reception area.



*Our mission is to preserve and enhance the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations.*

DECEMBER 11 1997

In addition, the text of the draft EIR will be made available on the Internet after January 5, 1998 at <http://www.waterrights.ca.gov>. The graphs, tables and maps in the text may not be generally available on the Internet.

If you have any questions regarding the draft EIR, they can be directed to Mike Falkenstein at (916) 657-1377 or Jim Canaday at (916) 657-2208.

Sincerely,



Edward C. Anton, Chief  
Division of Water Rights

## EXECUTIVE SUMMARY

The purpose of this draft Program Environment Impact Report (PEIR) is to analyze and disclose the significant environmental affects of the U.S. Bureau of Reclamation (Reclamation) petition to consolidate and conform 16 of its Central Valley Project (CVP) water right permits. Reclamation petitioned the State Water Resources Control Board (SWRCB) to make four changes to 16 of its water rights permits issued by the SWRCB for operation of nine CVP facilities and became known as the Consolidated Place of Use Petition (CPOU). The petitioned changes were to: (1) conform the purpose of use; (2) consolidate the CVP authorized place of use; (3) expand the authorized place of use and; (4) extend the time to complete full beneficial use of water under the permits. The time extension will be handled as a separate action by the SWRCB and is not analyzed in this document.

The PEIR, prepared to analyze Reclamation's CPOU, serves two purposes: (1) to consider a series of potential actions and their overall environmental effects and to take steps to avoid unnecessary adverse environmental effects and; (2) to identify actions in the CPOU that will require additional or subsequent environmental documentation prior to approvals for future site specific actions that at the present are unknown to the SWRCB or Reclamation.

### Scope of the Program Environmental Impact Report

The PEIR analyzes the environmental consequences of the SWRCB amending the 16 CVP water right permits by incorporating specific changes that were requested in Reclamation's CPOU petition. The changes requested by Reclamation are:

- Change 1. Conform the purposes of use in the individual permits so that the 16 existing permits authorize use of water for the 11 purposes shown in Table 3-2 in Section 3 of the PEIR;
- Change 2. Consolidate the authorized POU for water diverted from all authorized CVP sources so that new POU maps identify all areas where water from a particular facility may be delivered consistent with the current integrated operation of the CVP;
- Change 3. Increase the authorized POU in the appropriate permits (as shown on the POU maps) by:
  - (a) including **encroachment** lands (lands that have already received CVP water within the 26 CVP water contractor service areas but are presently outside the authorized POU), and

- (b) including **expansion** lands (lands outside the authorized POU that have never received CVP water but are entitled to service under one of the existing 26 CVP water contracts).

The PEIR is both a programmatic and project-specific EIR and addresses the environmental consequences of implementing Changes 1 and 2. It also considers the environmental effects of increasing the authorized POU to include the 26 CVP water contractor encroached lands and expansion lands in the authorized POU (Changes 3a and 3b, respectively).

Encroached lands are discussed at the project-specific level. The PEIR focuses on encroached lands that have been served CVP water for agricultural land uses. Encroached lands in a municipal and industrial land use (whether CVP- or non-CVP-induced) are not analyzed in detail because impacts caused by those land use developments have already been evaluated in the California Environmental Quality Act (CEQA) documents prepared by other local land management authorities.

Potential environmental impacts associated with the expansion areas are discussed on a programmatic level because future land and water uses cannot be readily determined at this time, and would require speculation. Prior to SWRCB authorization for delivery of CVP water to expansion lands, more detailed site-specific environmental analysis and site-specific environmental documentation meeting CEQA requirements may be required.

#### **Description of Alternatives**

Three alternatives, in addition to the Proposed Project, are addressed in this PEIR. They include:

- Approving requested Changes 1, 2, and 3 to the 16 existing water right permits as requested by Reclamation in its CPOU petition. This alternative constitutes the Proposed Project.
- Denying requested Changes 1, 2, and 3 to the 16 existing water right permits in Reclamation's CPOU petition. Reclamation would have to limit CVP water delivery to the existing authorized uses. Reclamation would have to reoperate the CVP so that water from each CVP facility could be conveyed to its appropriate place of use, in accordance with the existing water rights permits. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water. This alternative constitutes the No Project Alternative.
- Approving requested Changes 1 and 2, and approving Change 3a of Reclamation's CPOU petition, to allow encroachment of the

POU into areas within the water contract service area boundaries that have already received CVP water. Reclamation would be able to deliver CVP water for any of the authorized uses for all of the permits. Reclamation would be able to deliver CVP water for any of the authorized uses for all of the permits specified in Table 3-2. Reclamation would be able to continue the integrated operation of the CVP by delivering CVP water from any authorized CVP source to any area within the authorized POU. Reclamation would also continue to deliver CVP water to encroached lands outside the authorized POU. This alternative constitutes the Existing Conditions Alternative.

- Approving requested Changes 1 and 2 of Reclamation's CPOU petition and denial of Changes 3a and 3b. Reclamation would be able to deliver CVP water for any of the authorized uses for all of the permits specified in Table 3-2. Reclamation would be able to continue the integrated operation of the CVP by delivering CVP water from any authorized CVP source to any area within the authorized POU. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water. This alternative constitutes the Permit Consolidation and Conformance Alternative.

#### **Significant Irreversible Environmental Changes**

The proposed project has resulted in significant adverse effects to vegetation and wildlife resources on encroachment lands and is expected to result in potential significant adverse environmental effects to vegetation and wildlife resources on expansion lands. At present the SWRCB and Reclamation do not know where water may be used and for what purposes by contractors on the expansion lands. Therefore, no approval to deliver water to expansion lands can be granted until adequate site-specific environmental documentation on expansion land water delivery proposals are completed.

#### **Mitigation Measures**

Because the impacts on the encroachment and expansion lands involve a historical impact and a potential future impact, they would require different strategies to mitigate associated adverse effects. Therefore, mitigation measures for each land category are addressed separately.

#### **Mitigation for Impacts on Encroachment Lands**

Of the 116,664 acres of encroachment lands that currently receive CVP water (60,121 acres for M&I uses and 56,543 acres for irrigated agriculture), the development and land use conversion of 49,602 acres was facilitated by delivery of CVP water.

The habitats of those 49,602 acres consisted of:

- 8 acres of valley-foothill hardwood-conifer
- 47 acres of mixed chaparral
- 198 acres of valley-foothill riparian/fresh emergent wetland
- 19,262 acres of annual grassland
- 29,918 acres of alkali scrub
- 169 acres of open water

The wildlife and vegetation associated with these habitats were directly affected by the delivery and use of CVP water. The impact to these habitats and the associated wildlife species, designated as endangered or threatened in accordance with federal and state endangered species protection mandates, is considered a significant adverse impact.

Mitigation for compensating past impacts to encroachment lands must provide similar environmental/habitat values that were associated with the affected lands. Suitable mitigation for the impact to 49,602 acres of habitat could consist of several different measures identified in the PEIR to acquire, maintain, and restore the environmental/habitat values needed to support listed species that were previously found on these lands. Measures identified to obtain these habitat values could include, but are not limited to:

- Acquiring lands for habitat restoration
- Implementing management programs to enhance existing habitat values
- Acquiring development rights to control land use activities to be consistent with target species needs and habitat requirements.

Reclamation is currently implementing several programs capable of achieving the mitigation requirements described in the PEIR. These programs consist of ongoing, adaptive management efforts that will, overtime, restore, create and maintain targeted environmental habitat values which would mitigate impacts associated with the construction and operation of the CVP. This program is recognized by the SWRCB as the appropriate means to obtain mitigation for the impacts to encroachment lands, provided that portions of the funds and management efforts of these ongoing programs would be specifically assigned to mitigating those environmental/habitat values adversely affected by the encroachment of CVP water supplies to the 49,602 acres outside the authorized POU.

## Mitigation for Impacts on Expansion Lands

Potential impacts in expansion areas were discussed at a programmatic level because future land and water uses cannot be determined at this time. For impacts associated with delivery of CVP water for municipal and industrial development in expansion areas, local government agencies will have to develop mitigation for county land use plans and project-specific plans during the preparation of CEQA documents. The SWRCB will be a responsible agency under CEQA with respect to project-specific CEQA documents and will make its final decision at that time whether to allow delivery of CVP water to specific expansion areas.

Reclamation will not be authorized under its water rights permits to deliver water for use in these areas until adequate environmental documentation has been prepared in accordance with CEQA and the SWRCB has approved delivery of CVP water to the specific location. The SWRCB will require applicable CVP water contractors or the appropriate local agency to be the lead agency for the preparation of the environmental document. Lands in the immediate vicinity of the habitats of designated plant and animal species will be defined in consultation with interested regulatory agencies. Upon definition or delineation of the habitat boundaries, site-specific mitigation measures will be developed to protect and preserve the size and values of these areas. Specific measures that may be implemented include:

- Avoiding the special management zones during land conversion, and prohibiting subsequent land management operations that would degrade the value of the zone for which it was defined
- Identifying suitable buffer areas and protecting them by deed restrictions to prevent future disturbance of special habitat management zone resources
- Preparing and implementing plans for offsite mitigation/compensation that will achieve full resource values through reconstruction or enhancement of similar special habitat management zones

Future land development in the expansion areas is a local action and Reclamation should not be responsible for implementing the land use mitigation measures, except that Reclamation shall not deliver water for use in the expansion areas unless enforceable mitigation measures are in place and approved by the SWRCB for the effects of water delivery in those areas.

In addition, mitigation will be developed as part of the site-specific environmental documents to be written for the renewal of CVP water service contracts. Over 67 contracts were scheduled to expire between 1993 and 1997. However, the Central Valley

Project Improvement Act (CVPIA) mandated that only interim contract renewals could occur until the Programmatic Environmental Impact Statement for the CVPIA is completed. During contract renewal, a needs analysis to determine beneficial use of the CVP water and a site-specific assessment to determine potential impacts of using CVP water for habitats for Federal and State-listed and proposed species is completed. All contract renewals will be subject to review under the National Environmental Policy Act (NEPA) and Endangered Species Act processes thus ensuring that potential impacts to threatened and endangered species will be analyzed. During the NEPA review process, the public will have the opportunity to evaluate and provide input with respect to the beneficial use of CVP water.

#### **Mitigation Monitoring Plan**

To effectively reduce, minimize, or avoid significant impacts to encroachment land resources, the SWRCB as lead agency pursuant to CEQA is responsible for designing a reporting or monitoring program that will ensure that mitigation measures adopted as part of project approval are implemented. Reclamation, as petitioner, will be responsible for implementing any conditions that the SWRCB places on its approval of all or part of the petition. Each CVP water contractor, although directly responsible for allocating CVP water to locations within its respective boundaries, is not responsible for implementing mitigation, reporting on its success, or monitoring its effectiveness, unless it is performed as part of a separate agreement between the CVP water contractor and Reclamation.

The PEIR proposes a process where Reclamation and the SWRCB will jointly develop criteria for evaluating the effectiveness of the restoration or mitigation projects in restoring the environmental habitat values needed to mitigate for the 49,602 acres of encroachment land impacts.

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## Acronym and Abbreviation List

ACID	Anderson-Cottonwood Irrigation District
APCD	Air Pollution Control District
Arvin-Edison authorized POU	Arvin-Edison Water Storage District
Avenal	Authorized Place of Use
BVWD	City of Avenal
CAAQS	Bella Vista Water District
CCWD	California Ambient Air Quality Standards
CEQA	Colusa County Water District
CNDDDB	California Environmental Quality Act
Coalinga	California Natural Diversity Data Base
Contra Costa	City of Coalinga
CPOU	Contra Costa Water District
CVP	Consolidated Place of Use
CVPIA	Central Valley Project
CWD	Central Valley Project Improvement Act
DPWD	Corning Water District
EBMUD	Del Puerto Water District
EID	East Bay Municipal Utility District
EIR	El Dorado Irrigation District
ESA	Environmental Impact Report
FWS	Endangered Species Act
GFI	US Fish and Wildlife Service
GVWD	Gross Farm Income
HCP	Glenn Valley Water District
Jones Valley	Habitat Conservation Plan
Keswick	Shasta County Service Area No. 6-Jones Valley
KWD	Shasta County Service Area No. 25-Keswick
M&I	Kanawha Water District
MGCSD	Municipal and industrial
NAAQS	Mountain Gate Community Services District
NEPA	National Ambient Air Quality Standards
OAWD	National Environmental Policy Act
PN	Orland-Artois Water District
POU	Petition Notice
Reclamation	Place of Use
SBCWD	US Bureau of Reclamation
SCVWD	San Benito County Water District
SCSD	Santa Clara Valley Water District
SLWD	Shasta Community Services District
SMUD	San Luis Water District
SSH	Sacramento Municipal Utility District
SWP	Silverthorn Summer Homes, Inc.
SWRCB	State Water Project
Westlands	State Water Resources Control Board
Westside	Westlands Water District
	Westside Water District

# Introduction

## 1.1 Background

Initially in 1985 and through subsequent amendments, the U.S. Bureau of Reclamation (Reclamation) petitioned the State Water Resources Control Board (SWRCB) to make four changes to 19 of its water rights permits issued by the SWRCB for operation of nine Central Valley Project (CVP) facilities. The petitioned changes were to: (1) consolidate the CVP Authorized Place of Use (POU), (2) expand the authorized POU, (3) conform the purposes of use, and (4) extend the time to complete full beneficial use of water under the permits. The petition was noticed on July 29, 1986, has become known as the Consolidated Place of Use (CPOU) petition, and is presented in Appendix A.

The SWRCB received several protests in response to the July 29, 1986, Petition Notice (PN), necessitating a hearing to address the issues raised by the protestants. In addition, because five of the permits were issued under State Filed Applications, any changes to the permits also require a hearing. Any SWRCB order issued in response to the petition must include findings under Water Code Section 10500 et seq. for the State Filed Applications.

After completion of the PN review period, Reclamation and the SWRCB initiated several actions leading to the preparation of this Environmental Impact Report (EIR). These actions included:

- Conducting a CVP water users survey to determine the use of lands located outside the authorized POU;
- Conducting a reconnaissance-level survey of vegetative cover and habitats found on lands located outside the authorized POU, including defining vegetation and habitats that were found on these lands prior to the delivery of CVP water supplies;
- Compiling data and information regarding physical, biological, and socioeconomic characteristics of the affected lands; and
- Refining the mapping and database of the affected lands.

On June 15, 1995, Reclamation amended its original 1985 petition to: (1) exclude the Black Butte and New Melones projects that were addressed in three of the permits and (2) reduce the requested POU expansion area from about 4,000,000 acres to 851,513 acres that are located outside the authorized POU but are eligible to receive CVP water under existing contracts with Reclamation. As a result of this amended petition, the number of water rights permits that would be affected by the proposed project is reduced from 19 to 16.

The location of the 851,513 acres was identified on Geographic Information System (GIS) maps filed with the SWRCB on June 8, 1995. The boundaries of other water contractors with

water service contracts were checked and corrected, resulting in changes to the initial estimated affected area. The corrected area now involved in the petition covers 834,667 acres. Of this total, only about 116,664 acres have actually received CVP water (56,543 acres in irrigated agricultural land use and 60,121 acres in municipal and industrial land use).

On June 26, 1996, Reclamation requested that SWRCB remove the request to grant a time extension to complete the full beneficial use of water as part of the CPOU petition and address that issue separately. The SWRCB has agreed to address this issue as a separate item; therefore, it is not discussed in this EIR.

The SWRCB's approval of the amended CPOU petition could have a significant adverse effect on the environment. Therefore, an EIR is required to be prepared in accordance with the California Environmental Quality Act (CEQA). The SWRCB is serving as lead agency in accordance with CEQA.

## 1.2 Scope of this Environmental Impact Report

This EIR analyzes the environmental consequences of the SWRCB amending the 16 CVP water right permits identified in Table 3-2 in Section 3 of this EIR by incorporating the changes that were requested in Reclamation's CPOU petition. The changes requested by Reclamation are:

- Change 1. Conform the purposes of use in the individual permits so that the 16 existing permits authorize use of water for the 11 purposes shown in Table 3-2 in Section 3 of this EIR (pages 3-6 and 3-7);
- Change 2. Consolidate the authorized POU for water diverted from authorized CVP sources so that new POU maps identify all areas where water from a particular facility may be delivered consistent with the current integrated operation of the CVP;
- Change 3. Increase the authorized POU in the appropriate permits (as shown on the POU maps) by:
  - (a) including encroachment lands (lands that have already received CVP water within the 26 CVP water contractor service areas but are presently outside the authorized POU), and
  - (b) including expansion lands (lands outside the authorized POU that have never received CVP water but are entitled to service under one of the existing 26 CVP water contracts).

This EIR addresses the environmental consequences of implementing Change 1 (consolidating the purposes of use of the individual permits) and Change 2 (amending the permits so that water from any CVP facility can be delivered to any CVP water contractor

within the authorized POU that is capable of receiving such water). It also considers the environmental effects of increasing the authorized POU to include the 26 CVP water contractor encroached lands and expansion lands in the authorized POU (Changes 3a and 3b, respectively). Locations of the lands proposed for inclusion in the authorized POU because of encroachment and expansion are shown on the land use maps for each contractor, presented in Section 3 of this EIR. The acreage of the 26 CVP water contractors is presented in Table 2-2 (page 2-6).

This EIR is both a programmatic and project-specific EIR prepared in accordance with Section 15168 of the CEQA Guidelines. Encroached lands are discussed at the project-specific level because impacts associated with them have already occurred and can be readily defined.

The SWRCB recognizes that the delivery and use of CVP water on encroached lands have contributed to impacts on environmental resources in the existing CVP service area; however, CVP water delivery to the 26 CVP water contractors did not cause all of the impacts in the encroachment areas because other land development and water delivery projects also contributed to impacts on these resources. Therefore, the environmental analysis presented in this EIR focuses on encroached lands that have been served CVP water for agricultural land uses. Land uses on encroached agricultural lands that were not induced by the delivery of CVP water are not evaluated because impacts were caused by water sources other than the CVP. Encroached lands in a municipal and industrial land use (whether CVP- or non-CVP-induced) are not evaluated because impacts caused by those land use developments have already been evaluated in CEQA documents prepared by other local land management authorities.

Potential environmental impacts associated with the expansion areas are discussed on a programmatic level because future land and water uses cannot be readily determined at this time, and would require speculation of future CVP water contractor uses of CVP water and decisions by local land management authorities. Prior to SWRCB authorization for delivery of CVP water to expansion lands, more detailed site-specific environmental analysis and site-specific environmental documentation meeting CEQA requirements may be required.

## SECTION 2

# Description of the Proposed Project and Alternatives

## 2.1 Introduction

As described in Section 1.2, Reclamation submitted its CPOU petition to the SWRCB to request three changes to its existing water right permits. These changes consist of:

1. Conforming the purposes of use in the 16 existing permits so that they authorize use of the water for the 11 purposes shown in Table 3-2 in Section 3 of this EIR.
2. Consolidating the authorized POU for water diverted from all authorized CVP sources so that new POU maps identify all areas where water from a particular facility may be delivered consistent with the current integrated operation of the CVP.
3. Increasing the authorized POU specified in the appropriate permits (as shown on the POU maps) by including: a) encroached lands, consisting of lands that currently receive CVP water; and b) expansion lands, consisting of lands that do not currently receive CVP water but are within CVP contracted service areas of individual CVP water contractors.

## 2.2 Description of Alternatives

Three alternatives, in addition to the Proposed Project, provide a full range of reasonable alternatives to be addressed in this EIR. They include the No Project Alternative (Alternative 1), the Existing Conditions Alternative (Alternative 2), and the Permit Consolidation and Conformance Alternative (Alternative 3). The alternatives consist of:

- Approving requested Changes 1, 2, and 3 to the 16 existing water right permits as requested by Reclamation in its CPOU petition. This alternative constitutes the Proposed Project.
- Denying requested Changes 1, 2, and 3 to the 16 existing water right permits in Reclamation's CPOU petition. Reclamation would have to limit CVP water delivery to the authorized uses specified for each permit in Table 3-2. Reclamation would have to reoperate the CVP so that water from each CVP facility could be conveyed to its appropriate place of use, in accordance with the existing water rights permits. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water. This alternative constitutes the No Project Alternative.

SECTION 2 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

- Approving requested Changes 1 and 2, and approving Change 3a of Reclamation's CPOU petition, to allow encroachment of the POU into areas within the water contract service area boundaries that have already received CVP water. Reclamation would be able to deliver CVP water for any of the authorized uses for all of the permits specified in Table 3-2. Reclamation would be able to continue the integrated operation of the CVP by delivering CVP water from any authorized CVP source to any area within the authorized POU. Reclamation would also continue to deliver CVP water to encroached lands outside the authorized POU. This alternative constitutes the Existing Conditions Alternative.
  
- Approving requested Changes 1 and 2 of Reclamation's CPOU petition and denial of Changes 3a and 3b. Reclamation would be able to deliver CVP water for any of the authorized uses for all of the permits specified in Table 3-2. Reclamation would be able to continue the integrated operation of the CVP by delivering CVP water from any authorized CVP source to any area within the authorized POU. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water. This alternative constitutes the Permit Consolidation and Conformance Alternative.

Table 2-1 summarizes the changes associated with the Proposed Project and three alternatives.

<b>Table 2-1</b>			
<b>Permit Changes Included in the Proposed Project and Alternatives</b>			
<b>Alternative</b>	<b>Change 1 Conform Purposes of Use</b>	<b>Change 2 Consolidate Place of Use</b>	<b>Change 3 Expand Place of Use</b>
<b>Proposed Project</b>	Approval	Approval	Increase the authorized POU by adding all land within the boundaries of the 26 CVP water contract service areas (including encroachment and expansion areas). The increase would consist of 834,667 acres if both changes 3a and 3b are approved.
<b>Alternative 1 - No Project Alternative</b>	No approval	No approval	No approval. The authorized POU would remain as currently permitted, resulting in no increase to the authorized POU. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water.
<b>Alternative 2 - Existing Conditions Alternative</b>	Approval	Approval	Increase the authorized POU by adding those lands within the boundaries of the 26 CVP water contract service areas that currently receive CVP water (encroachment areas [3a]). The encroachment areas consist of 116,664 acres.
<b>Alternative 3 - Permit Consolidation and Conformance Alternative</b>	Approval	Approval	No approval. The authorized POU would remain as currently permitted, resulting in no increase to the authorized POU. Reclamation would have to specify to the CVP water contractors that encroached lands could no longer receive CVP water.

## 2.2.1 Proposed Project

Selection of the Proposed Project would result in the SWRCB approving Changes 1, 2, and 3a (and 3b pending future approval by the SWRCB) requested in Reclamation's CPOU petition. As a result, the SWRCB would:

- Conform the purposes of use specified in the 16 existing permits, resulting in approval of Change 1. The purposes of use consist of the 11 beneficial uses for which water may be appropriated pursuant to State law, described for each permit in Table 3-2 in Section 3 of this EIR.
- Consolidate the authorized POU specified in the 16 existing permits so that POU maps identify all areas where water from a particular facility may be used consistent with the current integrated operation of the CVP, thus making the authorized POU conform to the possible sources of water for each area, resulting in approval of Change 2 (Figures 2-1 through 2-5).
- Increase the authorized POU specified in the appropriate permits (as shown on the POU maps) to include encroachment areas (lands outside the authorized POU but within the 26 CVP water contractor service areas that have already received CVP water), resulting in approval of Change 3a. Conditioned upon the further approval by the SWRCB, the SWRCB also would authorize increasing the authorized POU to include expansion lands (lands outside the authorized POU that have never received CVP water but are within one of the 26 CVP water contractor service area boundaries), resulting in programmatic approval of Change 3b. Such further approvals would be considered only after an adequate environmental document for the specific projects were certified by the lead agency. Upon further specific approval of Change 3b, these actions could result in delivery of CVP water to an expansion area.

Approval of the Proposed Project would expand the authorized POU to existing water contractor service area boundaries. Change 3a would increase the authorized POU by about 116,664 acres. The potential CVP water delivery area may increase by an additional 718,003 acres if future approvals of 3b changes are granted, for a total increase of 834,667 acres.

## 2.2.2 No Project Alternative (Alternative 1)

Selection of the No Project Alternative would result in the SWRCB denying Changes 1, 2, and 3 requested in Reclamation's CPOU petition. Permit conditions currently in effect would remain intact and would be enforced by the SWRCB. As a result, the SWRCB would:

- Not conform the purposes of use specified in the 16 existing permits, resulting in denial of Change 1.

- Not consolidate the authorized POU specified in the 16 existing permits so that the POU maps would not identify all areas where water from a particular facility may be used; therefore, the permits would continue to have different places of use, resulting in denial of Change 2.
- Not increase the authorized POU specified in the 16 existing permits so that the POU boundary would continue to not include (1) lands outside the authorized POU that have received CVP water (encroachment lands) and (2) lands that could potentially receive water (expansion lands), resulting in denial of Change 3.

Approval of Alternative 1 would require Reclamation to terminate CVP water delivery to lands outside the authorized POU. In addition, Reclamation would have to alter current CVP operations to separate sources of water to ensure that water deliveries are made in accordance with existing permit conditions. It is not currently possible to separate water sources. If the SWRCB does not consolidate the CVP operations, a method for separating the operations of CVP facilities would have to be created to ensure conformance with permits.

### 2.2.3 Existing Conditions Alternative (Alternative 2)

Selection of the Existing Conditions Alternative would result in the SWRCB approving Changes 1, 2, and 3a requested in Reclamation's CPOU petition. Permit conditions currently in effect would be modified to incorporate Reclamation's requested Changes 1, 2, and 3a. As a result, the SWRCB would:

- Conform the purposes of use specified in the 16 existing permits, resulting in approval of Change 1. The purposes of use consist of the 11 beneficial uses for which water may be appropriated pursuant to State law, described for each permit in Table 3-2 in Section 3 of this EIR.
- Consolidate the authorized POU specified in the 16 existing permits so that POU maps identify all areas where water from a particular facility may be used consistent with the current integrated operation of the CVP, thus making the authorized POU conform to the possible sources of water for each area, resulting in approval of Change 2.
- Increase the authorized POU specified in the 16 existing permits (as shown on the GIS maps) to include encroached areas (lands outside the authorized POU but within the 26 CVP water contractor service areas that have already received CVP water), resulting in approval of Change 3a. Expansion of CVP water delivery onto lands that have never received CVP water but are within one of the 26 CVP water contractor service areas (Change 3b) would not be allowed with this alternative.

Approval of Alternative 2 would expand the authorized POU to include lands within the existing water contractor service area boundaries that are currently receiving CVP water supplies. This alternative would increase the authorized POU by about 116,664 acres.

### 2.2.4 Permit Consolidation and Conformance Alternative (Alternative 3)

Selection of the Permit Consolidation and Conformance Alternative would result in the SWRCB approving Changes 1 and 2 requested in Reclamation's CPOU petition. Permit conditions currently in effect would be modified to incorporate Reclamation's requested Changes 1 and 2. Approval of Change 3 would be pending further SWRCB action. As a result, the SWRCB would:

- Conform the purposes of use specified in the 16 existing permits, resulting in approval of Change 1. The purposes of use consist of the 11 beneficial uses for which water may be appropriated pursuant to State law, described for each permit in Table 3-2 in Section 3 of this EIR.
- Consolidate the authorized POU specified in the 16 existing permits so that POU maps identify all areas where water from a particular facility may be used consistent with the current integrated operation of the CVP, thus making the POU conform to the possible sources of water for each area, resulting in approval of Change 2.
- Not increase the authorized POU specified in the 16 existing permits so that the authorized POU boundary would continue to not include (1) lands outside the authorized POU that have received CVP water (encroachment lands); and (2) lands that could potentially receive water (expansion lands), resulting in denial of Change 3. Therefore, approval of Alternative 3 would require Reclamation to terminate CVP water delivery to lands outside the authorized POU until the SWRCB takes action on Change 3.

### 2.2.5 Acreage to be Included in the POU for Each Alternative

Table 2-2 presents the acreage within each CVP water contractor service area that would be affected by each alternative. As shown, the Proposed Project would expand the authorized POU by about 116,664 acres. Pending approval of site-specific environmental documents, the authorized POU may increase by an additional 718,003 acres, for a total increase of 834,667 acres. Alternative 1 would not expand the authorized POU; Alternative 2 would expand the authorized POU by about 116,664 acres; and Alternative 3 would not expand the authorized POU, pending further SWRCB action. Figures 2-1 through 2-5 illustrate the authorized POU associated with existing water right permits.

SECTION 2 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

CVP Water Contractor	Total Contracted Water Service Area (Acres)	Acreage Outside POU	POU Increase (Acres)				
			Proposed Project		Alt. 1 No Project Alternative	Alt. 2 Existing Conditions Alternative	Alt. 3 Permit Consolidation & Conformance
			Encroachment	Expansion			
Anderson-Cottonwood Irrigation District	33,240	230	0	230	0	0	0
Arvin-Edison Water Storage District	132,848	3,847	2,101	1,746	0	2,101	0
Avenal, City of	46,871	34,690	3,124	31,566	0	3,124	0
Bella Vista Water District	33,813	1,281	1,021	260	0	1,021	0
Coalinga, City of	106,618	92,007	4,674	87,333	0	4,674	0
Colusa County Water District	45,954	2,147	1,499	648	0	1,499	0
Contra Costa Water District	115,220	1,031	0	1,031	0	0	0
Coming Water District	13,049	2,034	1,647	387	0	1,647	0
Del Puerto Water District	34,479	1,000	808	192	0	808	0
East Bay Municipal Utility District	259,324	1,494	0	1,494	0	0	0
El Dorado Irrigation District <sup>a</sup>	23,578	23,578	18,495	5,083	0	18,495	0
Glenn Valley Water District	1,965	248	0	248	0	0	0
Kanawha Water District	15,967	902	689	213	0	689	0
Mountain Gate Community Services District	4,012	3,992	1,406	2,586	0	1,406	0
Orland-Artois Water District	31,292	111	111	0	0	111	0
Sacramento Municipal Utility District	2,830	2,830	2,830	0	0	2,830	0
San Benito County Water District	47,540	5,107	2,564	2,543	0	2,564	0
San Luis Water District	64,668	9,609	9,609	0	0	9,609	0
Santa Clara Valley Water District <sup>b</sup>	835,200	592,988	27,669	565,319	0	27,669	0
Shasta Community Services District	6,294	51	0	51	0	0	0
Shasta County Service Area No.6 - Jones Valley	1,171	1,171	668	503	0	668	0
Shasta County Service Area No. 25 - Keswick	5,299	3,635	918	2,717	0	918	0
Shasta Lake, City of	6,979	231	118	113	0	118	0
Silverthorn Summer Homes, Inc.	55	55	55	0	0	55	0
Westlands Water District	605,548	49,401	36,419	12,982	0	36,419	0
Westside Water District	17,479	997	239	758	0	239	0
<b>TOTAL</b>	<b>2,491,293</b>	<b>834,667</b>	<b>116,664</b>	<b>718,003</b>	<b>0</b>	<b>116,664</b>	<b>0</b>

<sup>a</sup>Acreage of district only includes those lands within the Folsom service area. Other lands within the district served by the Sly Park facilities are not included.

<sup>b</sup>Acreage in "Total" column includes all lands within Santa Clara County (835,200 acres). Although all of these lands are within the CVP water contractor service area, not all lands receive CVP water because of limited water supplies and lack of a feasible means to deliver water. As shown, 592,988 acres of the total 835,200 acres are located outside the authorized POU.

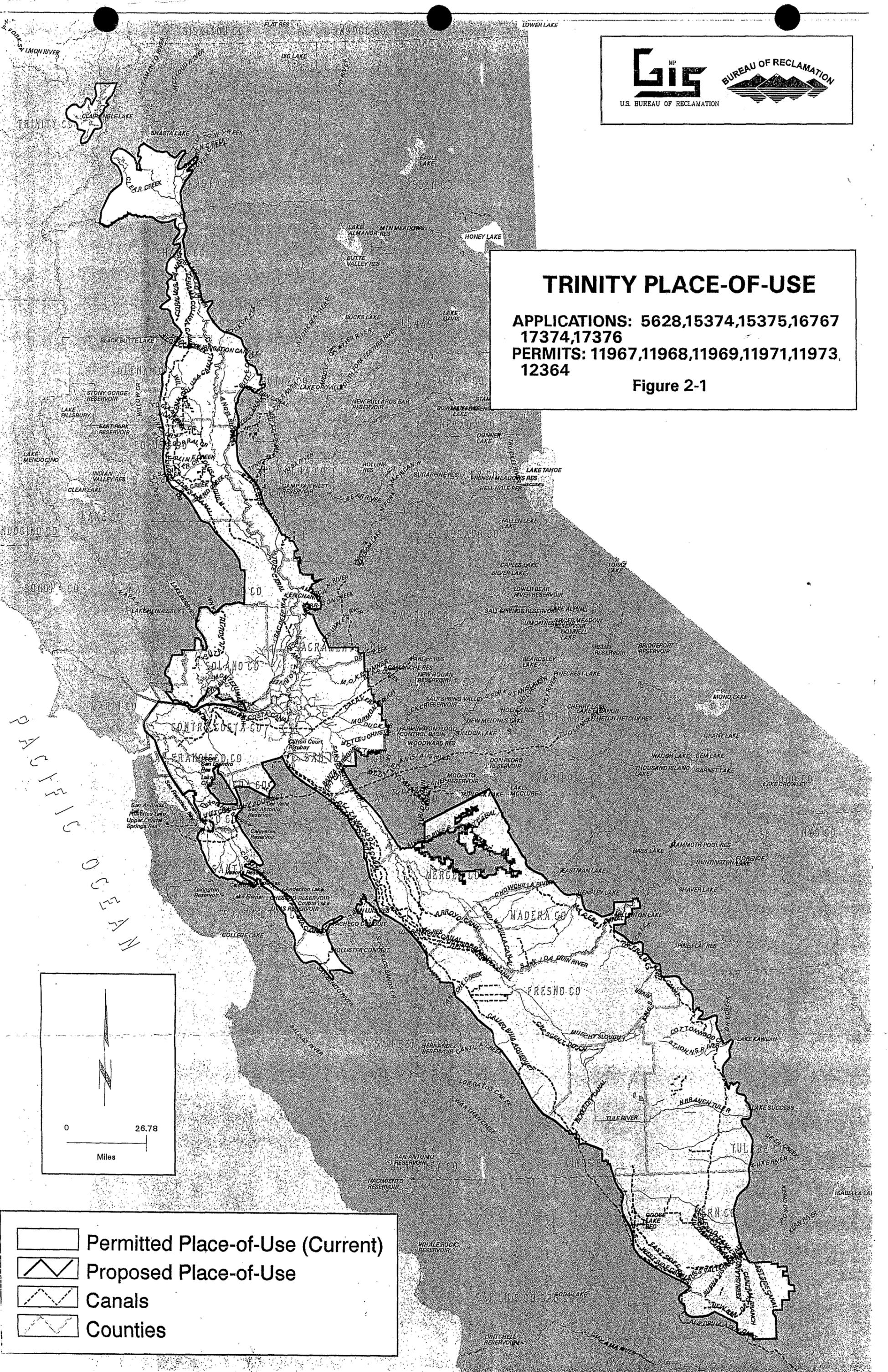


**TRINITY PLACE-OF-USE**

**APPLICATIONS: 5628,15374,15375,16767  
17374,17376**

**PERMITS: 11967,11968,11969,11971,11973,  
12364**

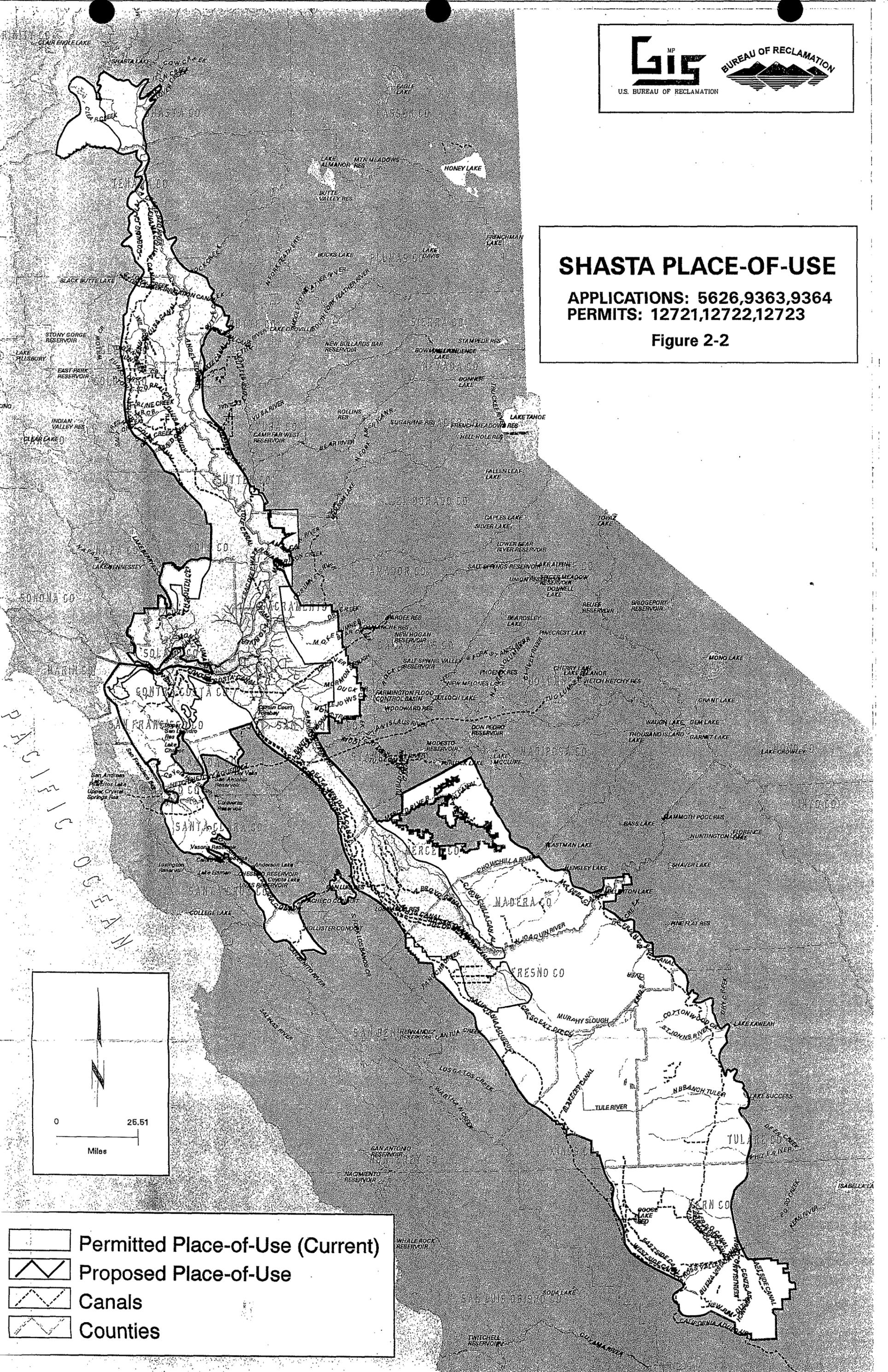
**Figure 2-1**

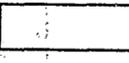
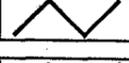
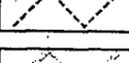
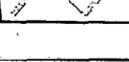


# SHASTA PLACE-OF-USE

APPLICATIONS: 5626,9363,9364  
 PERMITS: 12721,12722,12723

Figure 2-2



-  Permitted Place-of-Use (Current)
-  Proposed Place-of-Use
-  Canals
-  Counties

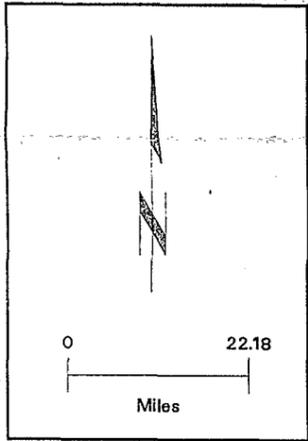
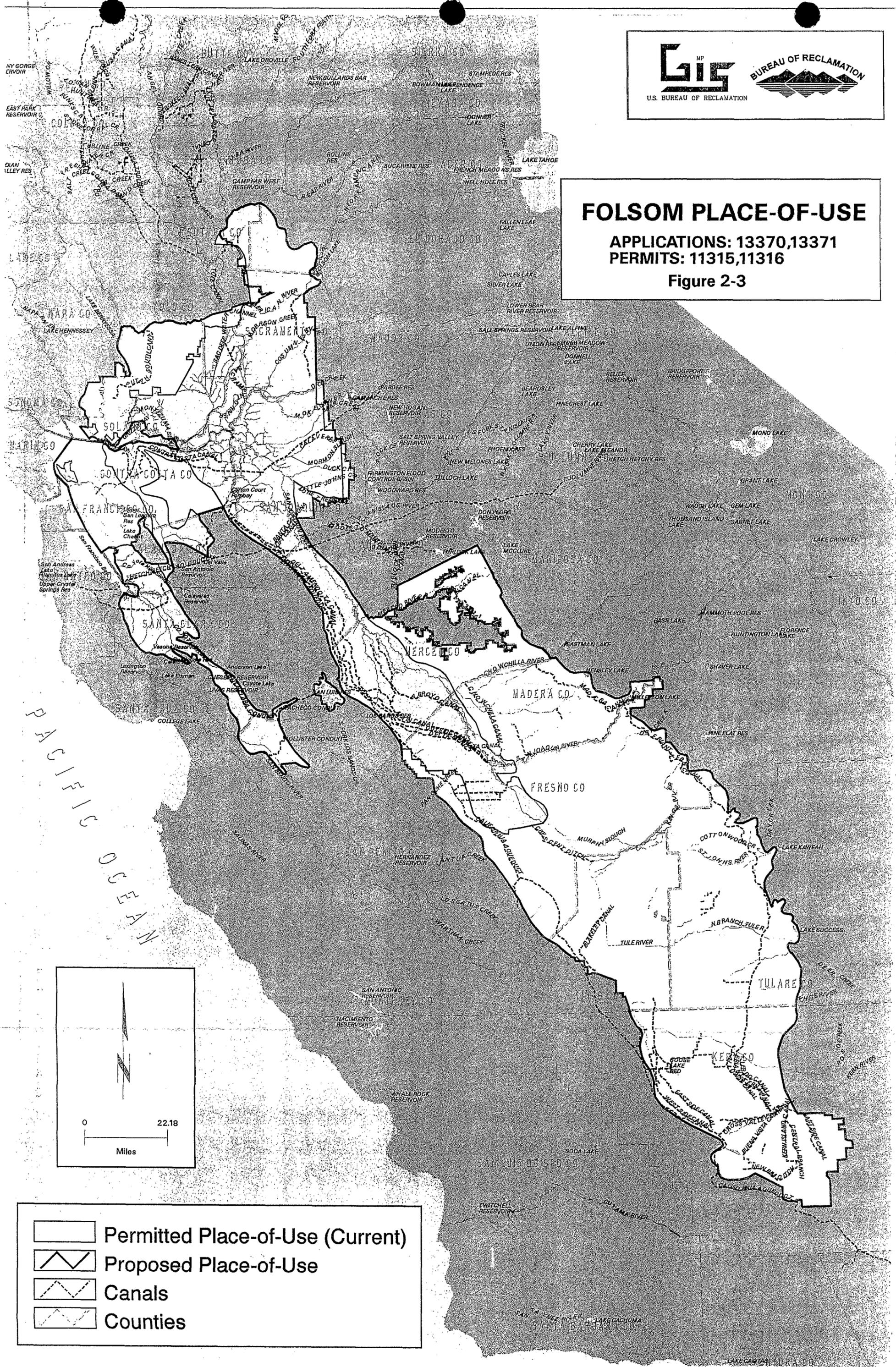


# FOLSOM PLACE-OF-USE

APPLICATIONS: 13370,13371

PERMITS: 11315,11316

Figure 2-3



	Permitted Place-of-Use (Current)
	Proposed Place-of-Use
	Canals
	Counties

SONOMA CO

SOLANO CO

MARIN CO

SURUNBAY

ONZDY RAY

SACRAMENTO CO

CONTRA COSTA CANAL

CONTRA COSTA CO

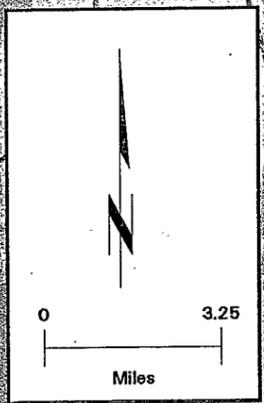
Clifton Court Forebay

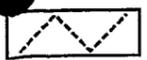
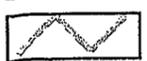
Upper  
San Leandro  
Res.

Lower  
Chabot

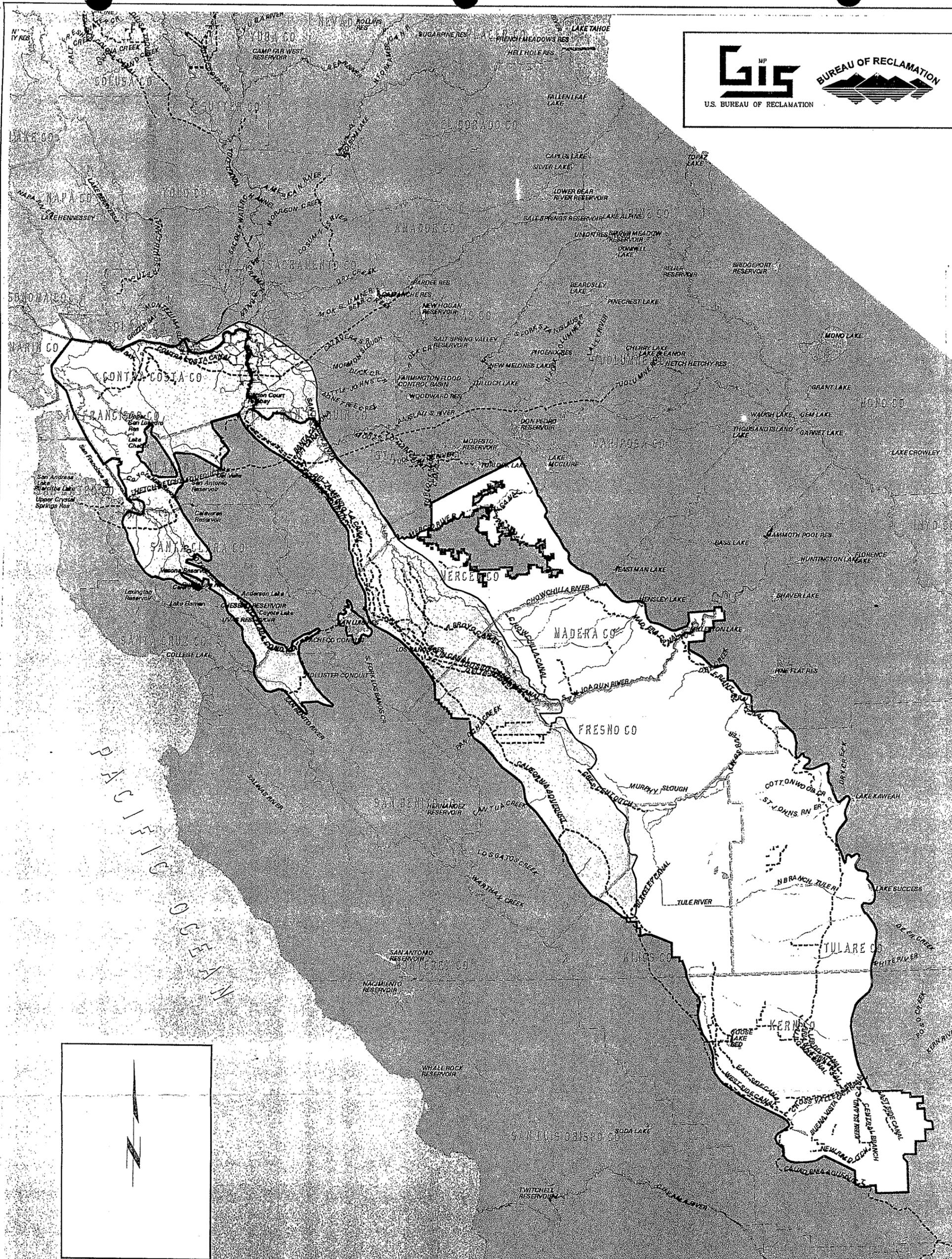
ALAMEDA CO

SAN MATEO CO



-  Permitted Place-of-Use (Current)
-  Proposed Place-of-Use
-  Canals
-  Counties

**CONTRA COSTA PLACE-OF-USE**  
 APPLICATIONS: 9366,9367,22316  
 PERMITS: 12725,12726,15735  
 Figure 2-4



**DELTA-MENDOTA CANAL**  
**PLACE-OF-USE**  
 APPLICATIONS: 9368,15764  
 PERMITS: 12727,12860  
 Figure 2-5

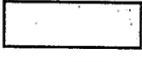
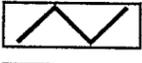
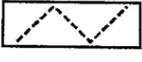
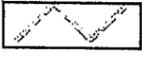
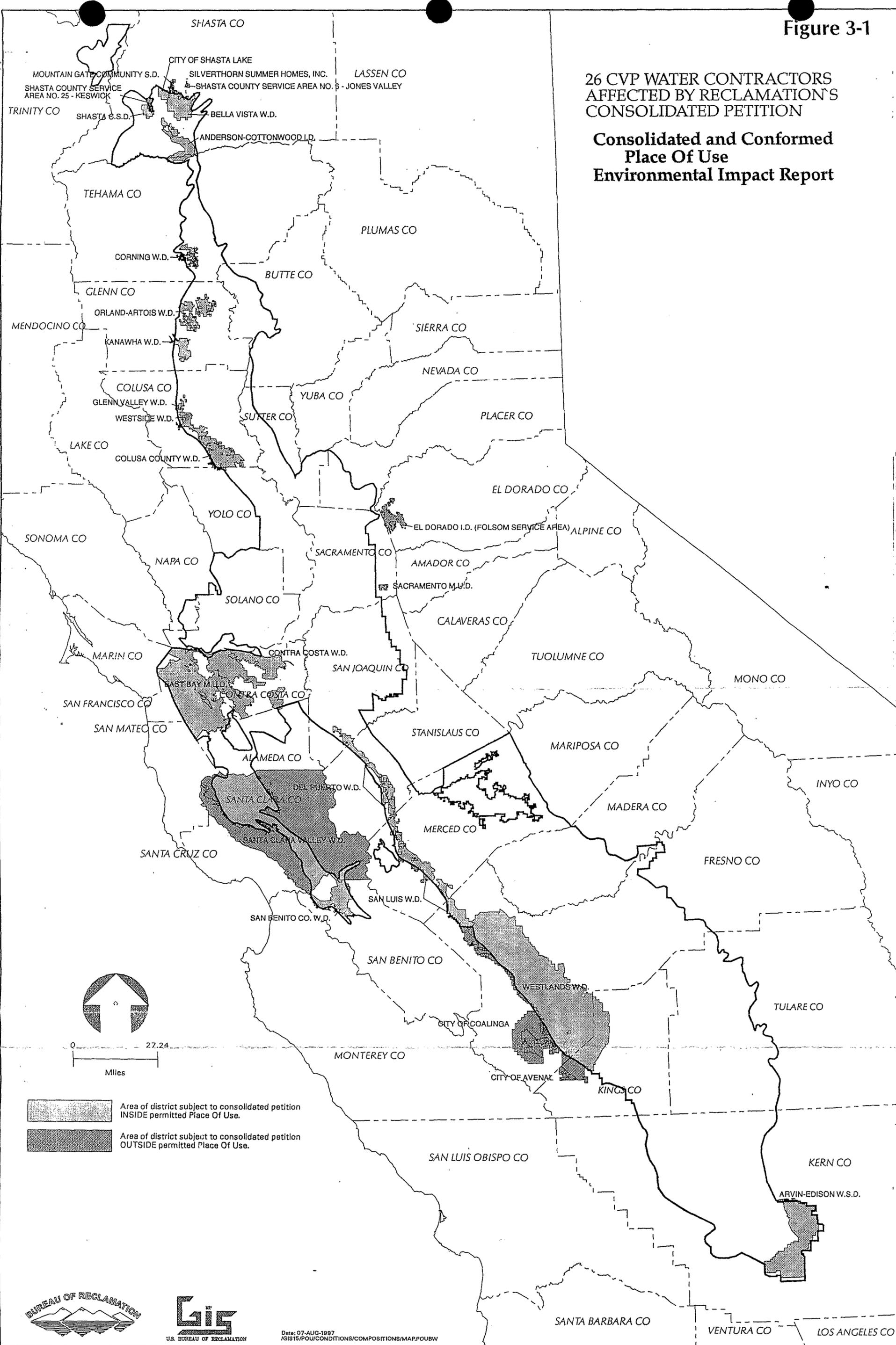
-  Permitted Place-of-Use (Current)
-  Proposed Place-of-Use
-  Canals
-  Counties

Figure 3-1

26 CVP WATER CONTRACTORS  
AFFECTED BY RECLAMATION'S  
CONSOLIDATED PETITION

Consolidated and Conformed  
Place Of Use  
Environmental Impact Report



Date: 07-AUG-1997  
/GIS15/POU/CONDITIONS/COMPOSITIONS/MAP.POU.BW

FIGURE 2-1 (~~FIG 2~~)

FIGURE 2-2 (~~10E2~~)

FIGURE 2-3 (~~LOE2~~)

FIGURE 2-4 (~~1 OF 2~~)

FIGURE 2-5 (1 of 2)

## Environmental Setting

### 3.1 Introduction

This section describes the general environmental setting of the Central Valley; describes the environmental resources that encompass one or more CVP water contractor service areas; presents physical, biological, and cultural environmental resource data for each of the 26 CVP water contractor service areas; and provides maps showing the uses of lands located within each of the 26 CVP water contractor service areas but outside the authorized POU. Land use designations titled "Irrigated CVP" and "Municipal & Industrial CVP" on the land use maps denote encroachment lands. The other map designations denote expansion lands. Acreages listed in this EIR are based on Reclamation's records using GIS and may differ from the acreages provided by other sources.

### 3.2 General Environmental Setting

Lands that would be affected by the Proposed Project and alternatives are located throughout the Central Valley, from the City of Shasta Lake in the north to the City of Bakersfield in the south (Figure 3-1). The lands extend from the San Francisco Bay Area eastward to the Sierra Nevada foothills. About 834,667 acres of land would be affected by the Proposed Project and alternatives.

Climate, topography, geology, and ecological conditions vary widely throughout the Central Valley. In general, agricultural lands served by CVP water contractors have relatively little topographic relief. The climate is characterized by warm to hot dry summers with relatively long growing seasons, interspersed with relatively mild wet winters. The geology and soils of most agricultural lands are conducive to commercial agricultural production with limited improvements required. Rainfall is all but absent during the growing season, requiring irrigation to meet crop water requirements.

M&I lands served by CVP water contractors vary in location, topography, climate, and vegetative cover. Depending on location, the climate of these lands varies from relatively cool summers in the San Francisco Bay Area to hot summers in the Central Valley and Sierra Nevada foothills. Vegetation, soils, and geology also vary by location. Geologic formations range from the sedimentary deposits of the coastal mountains and Central Valley to the volcanic and granitic formations of the Sierra Nevada foothills.

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SAC/137239/SEC3.WPD

3-2

Insert Figure 3-1 (location map)  
11 x 17  
(total two pages)

Figure 3-1 (2 of 2)

SAC/137239/SEC3.WPD

3-4

C - 0 9 3 4 4 6

### 3.3 Environmental Resources of the Lands Outside the POU

#### 3.3.1 Water Use

The CVP extends from the Cascade Range south to the Kern River. The CVP stores and distributes water of the Sacramento, American, and Trinity rivers for use in the Sacramento River Basin, San Joaquin Valley, and San Francisco Bay Area. Water from the Sacramento, American, and Trinity rivers is pumped from the Sacramento-San Joaquin Delta to places of use south of the Delta.

Reclamation currently has water contracts with 236 contractors to deliver CVP water. These contractors are listed in Tables B-1 and B-2 in Appendix B. The total volume of water contracted is 4,915,867 acre-feet annually. An additional 850,675 acre-feet are also contracted on a temporary basis (Class 2 water contracts).

A total of 2,445,263 acre-feet is contracted for annual delivery to the 26 water contractors that would be affected by Reclamation's CPOU petition. Table 3-1 identifies the amount of CVP water supplies contracted for annual delivery to each CVP water contractor that would be affected by Reclamation's CPOU petition.

CVP Water Contractor	Purchased under Long-Term Contract (acre-feet)	Type of CVP Water Delivery Contract	
		Municipal and Industrial (acre-feet)	Agricultural (acre-feet)
Anderson-Cottonwood Irrigation District	10,000		10,000
Arvin-Edison Water Storage District	40,000 <sup>a</sup>		
Avenal, City of	3,500	3,500	
Bella Vista Water District	24,000	7,000	17,000
Coalinga, City of	10,000	10,000	
Colusa County Water District	62,200		62,200
Contra Costa Water District	195,000	195,000	
Corning Water District	25,300		25,300
Del Puerto Water District	140,210 <sup>b</sup>		
East Bay Municipal Utility District	150,000	150,000	
El Dorado Irrigation District	7,550	7,550	
Glenn Valley Water District	1,730		1,730
Kanawha Water District	45,000		
Mountain Gate Community Services District	350	350	
Orland-Artois Water District	53,000		53,000
Sacramento Municipal Utility District	60,000	60,000	
San Benito County Water District	43,800	8,250	35,550
San Luis Water District	125,080 <sup>b</sup>		
Santa Clara Valley Water District	152,500	119,400	33,100

CVP Water Contractor	Purchased under Long-Term Contract (acre-feet)	Type of CVP Water Delivery Contract	
		Municipal and Industrial (acre-feet)	Agricultural (acre-feet)
Shasta Community Services District	1,000	1,000	
Shasta County Service Area No. 6— Jones Valley	190	190	
Shasta County Service Area No. 25— Keswick	500	500	
Shasta Lake, City of	2,750	2,750	
Silverthorn Summer Homes, Inc.	15	15	
Westlands Water District	1,150,000	6,000	1,144,000
Westside Water District	25,000		25,000
<b>TOTAL</b>	<b>2,328,675</b>	<b>571,505<sup>c</sup></b>	<b>1,406,880<sup>c</sup></b>

<sup>a</sup>Class 1 water supply, not classified as a M&I or agricultural type.  
<sup>b</sup>Multi-purpose contract that does not designate specific quantities for agricultural and M&I deliveries.  
<sup>c</sup>These totals do not include quantities for Arvin-Edison Water Storage District, Del Puerto Water District, Kanawha Water District, and San Luis Water District because the water deliveries for M&I or agricultural are not specified.

### 3.3.1.1 Operations of the CVP

CVP water stored in Reclamation-operated reservoirs is delivered in accordance with individual contracts with water contractors. Water is stored and released from the CVP facilities by Reclamation in the most efficient and economical manner. Distribution of water from the main canals to the individual users is the responsibility of each CVP water contractor. As a result of these operations, water from any CVP facility may be released for use in any part of the CVP service area where it is practical and feasible to convey the water.

### 3.3.1.2 Authorized Uses

Table 3-2 lists the authorized purposes of use and places of use assigned to each water right permit included in Reclamation's CPOU petition. As shown, the assigned purposes and places of use vary from permit to permit. These water right conditions do not necessarily correspond with the actual operations of the CVP.

As part of its Decision 990 discussion of navigation and flood control (Applications 9364 and 5626), the SWRCB declared that storage of water or regulation of flow for navigation and flood control purposes is a continuing paramount power of the United States, and that for the SWRCB to grant a permit to use water for such purposes pursuant to these applications would be improper. In addition, Decision 990 declared that adding a permit term would add nothing to the constitutional power of federal authority, and to the extent that such permit term were to purport to limit such power, it would clearly be an invasion of federal power (State Water Rights Board, 1961).

**Table 3-2  
Existing Authorized Use of CVP Water Supplies**

State Water Board Permit No.	Source and Major CVP Facilities	Place of Use	Permitted Use									
			Irrigation <sup>a</sup>	Domestic	Municipal	Industrial	Fish and Wildlife Enhancement	Salinity Control	Water Quality Control	Stock-watering	Recreation	
11315	American River Folsom Dam	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties	x						x			
11316	American River Folsom Dam	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties		x	x	x						x
11967	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	Sacramento and San Joaquin valleys, and Delta area	x	x					x			
11968	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties			x	x						
11969	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties	x	x				x		x		x
11971	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties	x	x						x		
11973	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties	x	x	x	x		x	x			x

**Table 3-2  
Existing Authorized Use of CVP Water Supplies**

State Water Board Permit No.	Source and Major CVP Facilities	Place of Use	Permitted Use								
			Irrigation <sup>a</sup>	Domestic	Municipal	Industrial	Fish and Wildlife Enhancement	Salinity Control	Water Quality Control	Stock-watering	Recreation
12364	Clear Creek Whiskeytown Dam Delta Mendota Canal Contra Costa Canal	Sacramento and Stockton areas; Delta area; San Joaquin Valley; Alameda, Santa Clara, and San Benito counties	x	x						x	x
12721	Sacramento River Shasta Dam Delta Mendota Canal	Sacramento Valley, Delta area, and San Joaquin Valley	x	x						x	x
12722	Sacramento River Shasta Dam Delta Mendota Canal	Sacramento Valley; Delta area; San Joaquin Valley; Solano, Contra Costa, Sacramento, and San Joaquin counties			x	x					
12723	Sacramento River Shasta Dam Delta Mendota Canal	Sacramento Valley, Delta area, and San Joaquin Valley	x	x						x	x
12725	Rock Slough (Delta) Contra Costa Canal	Contra Costa County	x	x							
12726	Rock Slough (Delta) Contra Costa Canal	Contra Costa County			x	x					
12727	Old River (Delta) Delta Mendota Canal	San Joaquin Valley floor	x	x							
12860	Old River (Delta) San Luis Dam Offstream storage via Delta Mendota Canal	San Joaquin Valley	x	x	x	x				x	x
15735	Rock Slough (Delta) Contra Loma Dam Offstream storage via Contra Costa Canal	Contra Costa County	x	x	x	x			x		x

<sup>a</sup> Irrigation includes water for frost protection and heat control.

C-093450

Some permits currently have navigation and flood control listed as purposes of use. Navigation and flood control purposes will be deleted from those permits that still contain these purposes.

### 3.3.2 Water Quality

Water quality characteristics vary throughout the CVP service area. The major water features of the CVP service area are the Sacramento River, American River, Sacramento-San Joaquin Delta, and San Joaquin River. Factors contributing to water quality include the quality of inflow from natural and human-made sources, effects related to the operation of CVP facilities, and influences associated with local land use practices.

#### 3.3.2.1 Sacramento River

The Sacramento River Basin covers 27,210 square miles. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks.

The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American rivers to the east; and Cottonwood, Stony, Cache, and Putah creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

The northern portion of the CVP includes Shasta, Clair Engle, and Whiskeytown reservoirs; and the mainstem and tributary streams of the upper Sacramento River, which are generally high-quality, coldwater habitats. Sacramento River water quality is generally good, and most drinking water standards are consistently met at Sacramento.

During most periods of the year, the reservoirs release water of low turbidity, suspended solids, color, and nutrient content. The reservoirs maintain both warmwater and coldwater fish habitats in summer, and produce relatively low algae and have minimal oxygen depletion because of their nutrient-limited character.

The reservoirs influence the rivers by moderating downstream temperatures. Water temperatures downstream of the dams are higher in summer and lower in winter than upstream of the dams. As the Sacramento River flows downstream of Shasta Lake, water quality gradually changes because of the addition of agricultural return water, permitted discharges, and acid mine drainage enriched in metals. The trend is toward higher constituent concentrations downstream of Shasta Lake.

#### 3.3.2.2 American River

The American River watershed drains an area of 1,900 square miles, extending from the Central Valley floor near sea level to more than 10,000 feet elevation. The water quality of the drainage is good as it drains toward Folsom Reservoir. Downstream of Nimbus Dam, the river changes character from a gravel/cobble bed mountain stream to a slower flowing, sandy bottom river when it joins the Sacramento River. In general, the river remains

oxygenated and has low dissolved concentrations of solids throughout its length. Significant amounts of agricultural drainage are not being discharged to the river.

### 3.3.2.3 Sacramento-San Joaquin Delta

The Sacramento-San Joaquin Delta is a complex system of deepened and channelized rivers and sloughs of widely varying depth, flow, and water quality. The San Joaquin and Sacramento rivers meet the relatively minor flows of the Cosumnes and Mokelumne rivers and merge their waters in the Delta.

The resulting water quality of the Delta channels reflects a mixture of a large volume of higher quality water from the north (Sacramento River and American River drainages) with a relatively small volume of low-quality water from the south (San Joaquin River drainage). Salinity, including saltwater intrusion from the San Francisco Bay estuary, and agricultural drainage are the primary water quality issues of concern for the Delta. Annual seasonal saltwater intrusion is now limited to some areas of the western Delta by water management of the CVP and State Water Project (SWP) (Herbold and Moyle, 1989; Skinner, 1972). Reverse flows can occur in the fall when CVP and SWP pumping increases compared to Sacramento River inflow to the Delta, resulting in saltwater intrusion.

Specific water quality objectives have been established for M&I beneficial uses, agricultural beneficial uses, and fish and wildlife beneficial uses. Water quality objectives for the Delta are set forth in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB, 1995) and the Bay-Delta Accord (SWRCB, 1994). These forums established objectives for dissolved oxygen, salinity, Delta outflow, river flows, export limits, toxic chemicals, bacterial contamination, and Delta Cross Channel operations.

### 3.3.2.4 San Joaquin River

The San Joaquin River Basin covers 15,880 square miles. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. This watershed excludes those lands that drain to the Tulare Lake Basin.

The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.

After leaving the Sierra Nevada, the river enters the Central Valley floor where its flows are subject to agricultural, municipal, and industrial water diversions. In addition, the river receives drainage flows from agricultural lands located in the San Joaquin Valley. As a result of these agricultural discharges and the historical alteration of surface water flows, groundwater supplies, and land use, water quality has been significantly altered. Discharges of agricultural drainage, containing salts, selenium, boron, molybdenum, and other trace elements, have degraded the water quality of the San Joaquin River.

### 3.3.3 Groundwater Resources

The CVP water contractors affected by the Proposed Project are located in the Sacramento Valley, Redding, San Joaquin Valley, and eastern and southern San Francisco Bay Area groundwater basins. Groundwater quality in these basins is generally good; however, groundwater quality in certain areas of the San Joaquin Valley and the San Francisco Bay Area has been degraded by agricultural and industrial activities.

Estimates of the total potential groundwater in storage in each of the basins are discussed below. The groundwater actually available for beneficial use is likely to be much less than the total volume in groundwater storage because of site-specific geologic, water quality, and groundwater flow conditions.

#### 3.3.3.1 Sacramento Valley

The Sacramento Valley groundwater basin is composed of permeable alluvial deposits thousands of feet thick. The estimated total volume of groundwater in storage in the basin is over 113 million acre-feet (DWR, 1975). Well yields are variable throughout the basin, but generally high-capacity wells can be drilled. Groundwater quality is good, with isolated areas of high boron, chloride, and other constituents that could limit groundwater use. Saline groundwater underlies the entire basin at variable depths. The groundwater basin is generally full; groundwater overdraft occurs in certain areas.

#### 3.3.3.2 Redding

The Redding groundwater basin covers about 510 square miles in the northern part of the Central Valley of California and is surrounded by the Cascade Range, Klamath Mountains, and Coast Ranges. It is separated from the main part of the valley by the Red Bluff Arch, a subsurface geologic structure. The Redding groundwater basin is composed of alluvial deposits thousands of feet thick. Estimated storage capacity in the uppermost 200 feet of saturated rock in the basin is 5.5 million acre-feet (U.S. Geological Survey [USGS], 1983). Well yields vary throughout the basin but are generally high, especially in areas that are underlain by coarse gravel derived from volcanic mudflow deposits to the east. Water quality is generally good, but saline groundwater underlies the entire basin. Along the margins of the basin where saline groundwater is found at shallow depths, groundwater supplies are limited.

#### 3.3.3.3 San Joaquin Valley

The San Joaquin Valley groundwater basin is composed of alluvial and lacustrine sediments many thousands of feet thick. The estimated storage capacity of the basin<sup>1</sup> is about 570 million acre-feet (DWR, 1975). Well yields are high throughout the valley. Corcoran clay, a major confining subsurface layer, extends throughout much of the valley. Intense pumping in the past caused a major overdraft to San Joaquin Valley aquifers, resulting in significant subsidence in some areas.

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<sup>1</sup>The Tulare subbasin is considered a component of the San Joaquin Valley Basin.

The delivery of surface water has reduced groundwater overdraft in most areas; however, groundwater overdraft still occurs in the southern part of the valley. The water quality of the confined aquifers is good, but in the shallower aquifers, salts and chemicals associated with agricultural and industrial activities have degraded groundwater quality. Poor-quality shallow groundwater historically has existed on the west side of the San Joaquin Valley; in addition, areas of poor quality groundwater are localized in other areas of the San Joaquin Valley.

#### **3.3.3.4 Eastern and Southern San Francisco Bay Area (including the Santa Clara Valley)**

The Eastern and Southern San Francisco Bay Area groundwater basin, which includes the Santa Clara Valley, is underlain by alluvial and estuarine sediments many thousands of feet thick. Typically, permeable sands and gravel are separated by less permeable silt and clay. The estimated storage capacity of this basin is about 12.2 million acre-feet (DWR, 1975). Well yields are high throughout the basin but tend to increase with distance from the bay.

In the past, significant groundwater overdraft caused steep declines in groundwater levels that, in turn, caused saltwater intrusion and subsidence. The delivery of surface water to the area has resulted in increased recharge and decreased pumpage. A significant portion of the recharge to this basin is artificial. Groundwater quality in the basin is good, except for localized contamination by industrial chemicals.

### **3.3.4 Air Quality**

Lands within the boundaries of the 26 CVP water contractor service areas located outside the authorized POU are situated in five air basins: the Sacramento Valley Air Basin, the San Joaquin Valley Air Basin, the San Francisco Bay Area Air Basin, the North Central Coast Air Basin, and the Mountain Counties Air Basin.

The climate in these air basins varies depending on their proximity to the Pacific Ocean and influence by local topography. Seasons in the interior valleys are characterized by low winter and high summer temperatures. In addition, air stagnation and inversions are common in the valleys, contributing to the degradation of local air quality.

#### **3.3.4.1 Air Quality Standards**

The state and federal governments have established ambient air quality standards for the criteria pollutants (Table 3-3). These standards were established to provide an adequate margin of safety to protect the public health and welfare. California Ambient Air Quality Standards (CAAQS) tend to be more stringent than the National Ambient Air Quality Standards (NAAQS), as shown in Table 3-3.

Table 3-3 Ambient Air Quality Standards				
Pollutant	Averaging Period	California Standards <sup>a</sup>	National Standards <sup>b</sup>	
			Primary <sup>c</sup>	Secondary
Ozone	1 Hour	0.09 ppm	0.12 ppm	0.12 ppm
Carbon Monoxide (CO)	8 Hour	9.0 ppm	9 ppm	--
	1 Hour	20 ppm	35 ppm	--
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	--	0.053 ppm	0.53 ppm
	1 Hour	0.25 ppm	--	--
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	--	0.03 ppm	--
	24 Hour	0.04 ppm	0.14 ppm	--
	3 Hour	--	--	0.5 ppm
	1 Hour	0.25 ppm	--	--
Suspended Particulate Matter (PM <sub>10</sub> )	Annual Geometric Mean	30 µg/m <sup>3</sup>	--	--
	24 Hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
	Annual Arithmetic Mean	--	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
Sulfates	24 Hour	25 µg/m <sup>3</sup>	--	--
Lead (Pb)	30-day	1.5 µg/m <sup>3</sup>	--	--
	Calendar Quarter	--	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
Hydrogen Sulfide	1 Hour	0.03 ppm	--	--
Vinyl Chloride	24 Hour	0.010 ppm	--	--
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	see footnote e	--	--

<sup>a</sup> California standards for ozone, carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, PM<sub>10</sub>, and visibility reducing particles are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

<sup>b</sup> National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

<sup>c</sup> National Primary Standards: The levels of air quality necessary with an adequate margin of safety to protect the public health.

<sup>d</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

<sup>e</sup> Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: California Air Resources Board, 1995.

Counties within the five air basins have been classified as either nonattainment, attainment, or unclassified for achieving NAAQS and CAAQS. The national and state air quality attainment statuses for the air basins in which the affected water contractors are located are listed in Table 3-4. Some of the counties do not currently monitor the levels of certain criteria pollutants; therefore, those counties are unclassified for these pollutants. For air quality planning purposes, areas designated as unclassified are equal to areas designated as attainment.

## 3.3.4.2 Emission Sources

Lands in the project area support four basic land uses: irrigated agriculture, dryland agriculture (dry cropped, fallow, idle, or grazed), municipal and industrial, and undeveloped (native vegetation). The primary pollutants associated with all four land uses include particulate matter and hydrocarbons (or organic gases) that may serve as ozone precursors.

Primary sources of hydrocarbon emissions from irrigated and dryland agriculture are pesticide and fertilizer application, fuel combustion in vehicles and farm equipment, and field burning. Sources of particulate emissions are field burning and farm operations, such as tilling, plowing, and driving farm equipment on loose earth, as well as entrained road dust and fuel combustion in vehicles and farm equipment.

Primary sources of hydrocarbon emissions from M&I land uses include fuel combustion in vehicles and industrial equipment, painting and solvent use, and residential heating. Dust entrained in pavement, structural and auto fires, construction and demolition, residential fuel combustion, and vehicle use are a few sources of particulate emissions.

In undeveloped areas, hydrocarbon emissions are primarily emitted from wildfires and vegetation. Particulate emissions emanate from windblown dust and wildfires.

Area	National					State						
	O <sub>3</sub>	CO	NO <sub>2</sub>	SO <sub>2</sub>	PM <sub>10</sub>	O <sub>3</sub>	CO	NO <sub>2</sub>	SO <sub>2</sub>	PM <sub>10</sub>	Pb	SO <sub>4</sub>
<b>Sacramento Valley Air Basin</b>												
Colusa County Colusa County Water District Glenn Valley Water District Westside Water District	U/A	U/A	U/A	U	U	N	U	A	A	N	A	A
Glenn County Kanawha Water District Orland-Artois Water District	U/A	U/A	U/A	U	U	N	U	A	A	N	A	A
Sacramento County El Dorado Irrigation District Sacramento Municipal Utility District	N	N/U/A	U/A	U	N	N	T/A	A	A	N	A	A
Shasta County Anderson-Cottonwood Irrigation District Bella Vista Water District Mountain Gate Community Services District Shasta County Service Area No. 6— Jones Valley Shasta County Service Area No. 25— Keswick Shasta Community Services District Shasta Lake, City of Silverthorn Summer Homes, Inc.	U/A	U/A	U/A	U	U	N	U	A	A	N	A	A

Table 3-4 National and State Air Quality Attainment Status for Criteria Pollutants in the Project Area												
Area	National					State						
	O <sub>3</sub>	CO	NO <sub>2</sub>	SO <sub>2</sub>	PM <sub>10</sub>	O <sub>3</sub>	CO	NO <sub>2</sub>	SO <sub>2</sub>	PM <sub>10</sub>	Pb	SO <sub>x</sub>
Tehama County Anderson-Cottonwood Irrigation District Coming Water District	U/A	U/A	U/A	U	U	N	U	A	A	N	A	A
Yolo County Colusa County Water District	N	N/U/A	U/A	U	U	N	A	A	A	N	A	A
<b>San Joaquin Valley Air Basin</b>												
Fresno County Avenal, City of Coalinga, City of San Luis Water District Westlands Water District	N	N/U/A	U/A	U	N	N	N/A	A	A	N	A	U
Kern County Arvin-Edison Water Storage District	N	N/U/A	U/A	A	N	N	A	A	A	N	A	U
Kings County Avenal, City of Westlands Water District	N	U/A	U/A	U	N	N	U	A	A	N	A	U
Merced County Del Puerto Water District San Luis Water District	N	U/A	U/A	U	N	N	U	A	A	N	A	U
San Joaquin County Del Puerto Water District	N	N/U/A	U/A	U	N	N	A	A	A	N	A	U
Stanislaus County Del Puerto Water District	N	N/U/A	U/A	U	N	N	A	A	A	N	A	U
<b>San Francisco Bay Area Air Basin</b>												
Alameda County East Bay Municipal Utility District Contra Costa Water District	U/A	N	U/A	A	U	N	A	A	A	N	A	A
Contra Costa County East Bay Municipal Utility District Contra Costa Water District	U/A	N	U/A	A	U	N	A	A	A	N	A	A
Santa Clara County San Benito County Water District Santa Clara Valley Water District	U/A	N/U/A	U/A	A	U	N	A	A	A	N	A	A
<b>North Central Coast Air Basin</b>												
San Benito County San Benito County Water District Santa Clara Valley Water District	N	U/A	U/A	U	U	N	U	A	A	N	A	A
Santa Cruz County San Benito County Water District	N	U/A	U/A	U	U	N	U	A	A	N	A	A
<b>Mountain Counties Air Basin</b>												
El Dorado County El Dorado Irrigation District	N	N	U/A	U	U	N	U	A	A	N	A	A
T = Transition N = Nonattainment A = Attainment U = Unclassified / = This symbol separates the urbanized areas from the remainder of the county Source: California Air Resources Board, 1996.												

### 3.3.5 Fish Resources

Important game fish in the Sacramento River include steelhead trout, striped bass, American shad, sturgeon, and four races of chinook salmon. Chinook and coho salmon and steelhead trout are the major coldwater fish species of the Trinity River. Hatchery-reared rainbow trout, kokanee salmon, and largemouth and smallmouth bass are the primary fish species in Shasta and Clair Engle reservoirs. More than 40 fish species inhabit the lower American River; fall-run chinook salmon, steelhead trout, and American shad are the dominant species. Folsom Reservoir features such species as chinook and kokanee salmon, hatchery-reared rainbow trout, largemouth and smallmouth bass, catfish, and various sunfish. Forty-eight species live in or annually migrate through the Delta area; the most popular game fish are striped bass and chinook salmon.

#### 3.3.5.1 Fish Species in Reservoirs, Rivers, and the Delta

**Shasta and Clair Engle Reservoirs.** These two large CVP reservoirs sustain both warmwater and coldwater species. The primary fish species are hatchery-reared rainbow trout, kokanee salmon, and largemouth and smallmouth bass. Extreme water level fluctuations characteristic of reservoirs can adversely affect these fish resources. Rapid changes in reservoir levels are more detrimental than long-term fluctuations. Bass and many of the nongame fish species may spawn in shallow water, and the spawning area may become dry during egg incubation. The months of most concern for nest dewatering are April through June. The availability of suitable habitat may vary greatly from year to year. In particular, shoreline vegetation used for cover may be totally eliminated in some years, which could affect habitat values.

**Folsom Reservoir and Lake Natoma.** Water levels fluctuate greatly in both reservoirs; Folsom in a seasonal and annual pattern, and Natoma on a daily and weekly cycle. Lake Natoma is the regulating afterbay of Folsom Reservoir. Folsom Reservoir sustains both coldwater and warmwater species. Landlocked chinook and kokanee salmon plus hatchery-reared rainbow trout dominate the coldwater fish populations; large and smallmouth bass, catfish, and various sunfish are the major warmwater species present. The high rate of flushing and drawdown of Lake Natoma contributes to its poor fish environment. The reservoir species are affected by alterations of shoreline habitat caused by water level fluctuations in the same manner as in the Shasta and Clair Engle reservoirs.

**Sacramento River.** Important game fish include steelhead trout and four races of chinook salmon, as well as warmwater and coldwater resident species in the 300 miles of habitat between Keswick Dam and the Delta. Winter-run chinook salmon constitute a small portion of the total salmon population. This species is listed as a state endangered species and a federal endangered species because it has declined significantly in recent years. Steelhead trout within the Central Valley Evolutionary Significant Unit are proposed to be listed as endangered. The National Marine Fisheries Service is expected to list this species as endangered in late-1997. Sacramento River fish species are presented in Table C-1 in Appendix C.

Appropriate spawning temperatures and substrate that are undisturbed for several months are key to chinook salmon spawning success. Spawning chinook require clean gravel

substrate and water temperatures in the range of 44°F to 58°F. Juvenile salmon also have water velocity, depth, cover, and temperature requirements and need an adequate food supply.

Other important game fish of the Sacramento River are striped bass, American shad, and sturgeon. The semi-buoyant eggs of striped bass and shad make them less susceptible to direct effects of seasonal changes in flow on egg or larval survival. Sturgeon produce adhesive eggs that attach to the substrate, but they spawn in deeper, warmer reaches of the lower river than salmon and trout, and the larvae are washed downstream into the Bay Delta estuary. Therefore, they are less affected than salmonids by changes in flow or temperature.

Species of interest to the state because of declining abundance are the hardhead and Sacramento splittail. The Sacramento splittail is proposed for federal threatened status. The Delta smelt is listed as a state threatened species and a federal threatened species.

**Trinity River.** Clair Engle Reservoir is the major reservoir on the Trinity River that blocks the historical salmon and steelhead spawning reaches of the upper river. The habitat area below Lewiston Dam has been reduced by temperature and flow changes. Currently, the upper reaches of the river are affected by sedimentation, loss of riparian vegetation, and temperature and flow changes.

Chinook and coho salmon and steelhead trout are the major coldwater fish species of the Trinity River. Their populations are sustained by hatchery production; the fish hatchery was built as mitigation for habitat lost upstream of Lewiston Dam. Changes that affect the flow and temperature regime of the river may affect salmon and steelhead survival.

**American River.** American River habitat is characterized by a series of mountain stream tributaries that drain to Folsom Reservoir and Lake Natoma at Nimbus Dam. Gravel enrichment in the portion of the river downstream of Nimbus Dam has been limited by sediment trapping behind the reservoirs, and downstream river flows are almost totally controlled by the reservoir. Peak discharges before Folsom Dam was constructed were from March through June; now the discharge peak occurs during winter months.

More than 40 fish species inhabit the lower American River (Table C-2 in Appendix C). Game fish are dominated by chinook salmon (fall-run only), steelhead trout, and American shad, all of which enter the river to spawn. Striped bass frequent the lower river in summer but have not been known to spawn there. Non-game fish include the hardhead and Sacramento splittail.

**Sacramento-San Joaquin Delta.** The Delta environment, once historically dominated by coldwater species, is now dominated by warmwater species. Currently, 48 species live in or migrate annually through the Delta area (Table C-3 in Appendix C). The major habitat modifications of the Delta have been the conversion of wetlands to channelized streams, including channel straightening, the removal of riparian vegetation, increased siltation, and water quality changes. Pumping from the Delta for the SWP and CVP, as well as upstream reservoir regulation of flows, has also affected the seasonality of flow regimes and the extent of saltwater intrusion into the Delta habitat.

The flow and water quality of the San Joaquin River as it enters the Delta are balanced by the western Sierra Nevada flows of the upper San Joaquin, Merced, Tuolumne, and Stanislaus rivers, and the agricultural drainage input from the valley area, mostly through Salt and Mud sloughs near Los Banos. The Mokelumne River joins the Delta separately. In general, the Sierra Nevada drainage is of high water quality, while the valley input is poor. The balance between the two sources varies seasonally, with summer flows often dominated by agricultural runoff in the portion of the San Joaquin River immediately downstream of Salt and Mud sloughs (before the dilution of flows from the Tuolumne River). The northern Delta is characterized by greater flows and higher species diversity but lower numbers of fish. The southern Delta tends to have a higher abundance of mostly introduced species (Herbold and Moyle, 1989).

The most popular game fish are striped bass and chinook salmon. Largemouth bass and several species of catfish are caught in Delta waters as well. Species of interest to the state because of declining abundance are the hardhead and Sacramento splittail. The Sacramento splittail is proposed for federal threatened status.

The Delta smelt is listed as a state and federal threatened species. Its numbers have declined greatly in recent years. The March 6, 1995, U.S. Fish and Wildlife Service (USFWS) biological opinion indicates that the Delta smelt decline is linked to declining estuarine habitat (USFWS, 1995). The Delta smelt population depends on the estuarine null zone (the meeting area of freshwater flows with saltwater) for spawning, rearing, and migration. The null zone is a highly variable habitat, and factors such as increased siltation and alteration of the circulation patterns of the estuary have resulted in the loss of this habitat. In addition to habitat degradation and loss of estuarine habitat, the Delta smelt has been subjected to entrainment upstream and reverse flows of water in the Sacramento-San Joaquin Delta and San Joaquin River (Moyle et al., 1992). These conditions occur during droughts and vary according to the amount of flow being diverted from the Sacramento-San Joaquin Delta (Monroe and Kelly, 1992).

### **3.3.6 Terrestrial Biological Resources**

Seven habitat types have been identified on lands within the CVP water contractor service areas that are located outside the authorized POU. These habitats maintain numerous plant and wildlife species, including special-status species (species designated by federal and state resource agencies for special management considerations).

#### **3.3.6.1 Fresh Emergent Wetland**

This habitat is found throughout the state, and occurs on most exposures and slopes at most elevations. It is most common on level to gently rolling topography below elevation 7,500 feet mean sea level (msl). Emergent wetlands are inundated frequently and occur in association with several terrestrial or aquatic habitats, including riverine, lacustrine, and wet meadow habitats (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in fresh emergent wetlands are presented in Table D-1 in Appendix D.

### 3.3.6.2 Annual Grassland

This habitat occurs throughout the Central Valley, mostly on level plains to gently rolling foothills. Annual grassland occurs at higher elevations surrounding valley-foothill riparian, alkali scrub, and fresh emergent wetland; and below valley oak woodland, blue oak woodland, blue oak-digger pine, chamise-redshank chaparral, and mixed chaparral habitats. Vegetation and wildlife species typically occurring in annual grasslands are presented in Table D-1 in Appendix D.

Vernal pools are a special form of wetlands within annual grassland habitats that may occur within the boundaries of two affected CVP water contractors. Vernal pools are shallow depressions filled with water from winter storms that subsequently dry up during spring or early summer. Vegetation is characterized by annual herbaceous plants (Holland and Keil, 1989). The CVP water contractors that have a medium to high potential for having these communities within their boundaries are Anderson-Cottonwood Irrigation District and Sacramento Municipal Utility District.

### 3.3.6.3 Alkali Scrub

This habitat occurs in the San Joaquin Valley in areas with low levels of precipitation and relative humidity, hot summer and cool winter temperatures, and an abundance of sunny days. Plant species composition varies along moisture, salinity, and microtopographic gradients (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in alkali scrub habitat are presented in Table D-1 in Appendix D.

### 3.3.6.4 Mixed Chaparral

This habitat typically occurs below 5,000 feet msl on mountain ranges throughout the state. Mixed and chamise-redshank chaparral habitats occur as a vegetative mosaic on low to middle elevation slopes. In northern California, mixed chaparral merges with annual grassland and blue oak-digger pine habitats at lower elevations. Species composition changes between northern and southern California and with precipitation, slope aspect, and soil type (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in mixed chaparral habitat are listed in Table D-1 in Appendix D.

### 3.3.6.5 Valley-Foothill Hardwood

Valley-foothill hardwood includes three different habitat types dominated by oaks: blue oak woodland, valley oak woodland, and blue oak-digger pine. Blue oak woodland and valley oak woodland occur outside the authorized POU, yet within the boundaries of several CVP water contractors. Blue oak woodland generally occurs between 500 and 2,000 feet msl elevation at the northern end of its range and from 250 to 3,000 feet msl in the central Coast Range. Valley oak woodland occurs in the Central Valley and Coast Range in remnant patches usually below 2,000 feet msl. Blue oak-digger pine generally rings the foothills of the Central Valley between 500 and 3,000 feet msl elevation (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in the three habitat types are presented in Table D-1 in Appendix D.

### 3.3.6.6 Montane Hardwood

This habitat ranges throughout California, mostly west of the Cascade-Sierra Nevada crest at elevations from 300 to 9,000 feet msl. At lower elevations, neighboring habitats include valley-foothill hardwood-conifer and mixed chaparral. Typical montane hardwood habitat is composed of a pronounced hardwood tree layer with poorly developed shrub and herbaceous layers. Montane hardwood-conifer occurs throughout California, following the upper and/or inland margins of the coastal redwood or Douglas fir habitats. Elevations range from 1,000 to 4,000 feet msl in the north and from 2,000 to 5,800 feet msl in the south. Montane hardwood-conifer is transitional between dense coniferous forest and montane hardwood habitats (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in montane hardwood habitat are listed in Table D-1 in Appendix D.

### 3.3.6.7 Valley-Foothill Riparian

This habitat is found in association with annual and perennial grasslands and oak woodland habitats, and ranges in elevation from sea level to 3,000 feet msl. Valley-foothill riparian habitats are typically found in valleys bordered by alluvial fans, lower foothills, and coastal plains (Holland and Keil, 1989). Vegetation and wildlife species typically occurring in the valley-foothill riparian habitat are presented in Table D-1 in Appendix D.

### 3.3.6.8 Special-Status Species

Special-status plant and animal species that may inhabit lands located outside the authorized POU but within the boundaries of CVP water contractors affected by Reclamation's petition are listed in Table D-2 in Appendix D. This table identifies those areas where, based upon available information, suitable habitat exists that is capable of supporting such species. In addition, Section 3.4 identifies special-status species that have been observed within each CVP water contractor service area located outside the authorized POU.

## 3.3.7 Cultural Resources

Each CVP water contractor area outside the authorized POU has the potential for having cultural resource sites that could be affected by future land development. Water contractor areas with rivers, streams, lakes, and abundant native food supplies have a higher potential for cultural resource sites existing within their boundaries than water contractor areas where these do not exist.

### 3.3.7.1 Prehistory

The CVP area has a long and complex history with distinct regional patterns that extend back more than 11,000 years. Evidence for the presence of prehistoric peoples in the CVP area is represented by the distinctive fluted spear points found on the margins of extinct lakes in the San Joaquin Valley.

Approximately 8,000 years ago, many California cultures shifted the main focus of their subsistence strategies from hunting to seed gathering as evidenced by the increase in food-

grinding implements found in archaeological sites dating to this period. This cultural pattern is found throughout the CVP area.

Cultural patterns as reflected in the archaeological record, particularly specialized subsistence practices, became better defined within the last 3,000 years. Along the coast in the Central Valley, archaeological evidence of social stratification and craft specialization is indicated by well-made artifacts such as charm stones and beads, which were often found with burials.

### 3.3.7.2 History

Initial Euroamerican introduction to the region came in the form of Spanish missionaries and soldiers, who entered California in 1769, eventually founding 21 missions along the California coast. This way of life began to crumble in 1822, with Mexico winning independence from Spain. Between 1822 and 1848, the large tracts of land previously held by the missions were divided by government grants into large ranchos, often consisting of tens of thousands of acres. The owners of these large estancias built homes, often of adobe, and maintained large herds of cattle and horses. Agricultural during this time was a minor endeavor, usually restricted to garden plots and small vegetable-growing operations.

The Treaty of Guadalupe Hidalgo in 1848 resulted in the transfer of California from Mexico, beginning what is called the American Period in California history. During that same year, gold was discovered in the foothills of the Sierra Nevada and thousands of hopeful miners entered the region. This rush of miners and settlers made the development and improvement of a transportation system a virtual necessity. Between 1850 and 1880, the development of hundreds of primary wagon routes, the evolution of steamboat travel along major rivers, and the completion of numerous railroads occurred. Most of the supply centers and shipment points along these transportation corridors eventually developed into cities, small towns, and settlements.

As settlements grew, agricultural enterprises became more common. During the early years, dryland agriculture predominated. A primary constraint to expansion of crop diversity and areas under cultivation was the lack of water. Irrigation was virtually unknown in California until the 1880s.

After the turn of the century, California settled into a period of slow growth and increased agricultural productivity and prosperity. California came to be viewed as a prime recreational area with the advent of the automobile age and the establishment of many national parks and other attractions. The development of the CVP in the 1940s and the introduction of more sophisticated farming methods boosted California's economic situation.

### 3.3.7.3 Ethnography Overview

Prior to European settlement of California, an estimated 310,000 native Californians spoke dialects of as many as 80 mutually unintelligible languages. This level of complexity necessitated a high level of multilingualism among the state's native peoples who interacted

widely with one another through trade and ceremonial exchanges. Intermarriage across language groups was likewise common.

California's native peoples have been divided by anthropologists into six "culture areas", based on perceived similarities of environments, lifestyles, and material culture: the Northwest, Northeast, Central, and Southern California regions, as well as the Colorado River and Great Basin culture areas. The factors most likely to distinguish one culture area from another are often related to elements of the physical environment.

All native Californians followed a basic hunter-gatherer lifestyle subsisting through a seasonal round of plant collecting, hunting, and fishing. Reliance on particular resources varied with location and season. Archaeological evidence indicates a general evolution over time from subsistence strategies that were based primarily on hunting large game to a broad-based economy that placed greater emphasis on diversity. Along with this diversification came population growth and a more settled way of life.

At the time of first contact with Spanish explorers and settlers, most groups inhabiting California had extremely evolved social, ceremonial, and political structures supported by an elaborate and varied material culture. This was especially true of the Central Sacramento-San Joaquin Valley and Southern Coast-Santa Barbara Channel regions, which were exemplified by the Yokuts and Chumash.

Native Californians were initially devastated by contact with Europeans, because of the advent of new diseases for which they had no immunity and hastened by the loss of their land base. Native culture is experiencing a resurgence today and a revival of traditional practices throughout the state.

#### **3.3.7.4 Ethnography of the Sacramento Valley and San Joaquin Valley**

The Maidu, Konkow (also known as northeastern Maidu), and Nisenan (also known as southern Maidu) inhabited an area of California from Lassen Peak to the Cosumnes River, and from the Sacramento River to Honey Lake. The division of these three groups is based on language differences and geographic location. The subsistence strategy of the Maidu was based on seasonally mobile hunting and gathering. Because the Maidu territory was largely a mountainous one, they relied more heavily on hunting than did the other groups. In 1833, a malaria epidemic killed up to 75 percent of the Maidu population. The population reduction from the epidemic left the Maidu, Konkow, and Nisenan unable to resist the overwhelming flood of miners and settlers. Many of the few survivors became wage laborers on mines and ranches, and their language and culture diminished.

The Yana of north-central California inhabited an area from Lassen Peak and the southern Cascade foothills on the east, Rock Creek on the south, Pit River on the north, and the east bank of the Sacramento River on the west. The Yana were hunter-gathers who relied heavily on the acorn crop. The first contact of the Yana with whites may have occurred as early as 1821, when a mission-military expedition entered their territory. Mining and settlement had little effect on the Yana; however, in 1846, Captain Fremont attacked and killed several Yana. The last of the Yana-Yahi people died in San Francisco in 1916.

The Wintu consist of a southern Patwin group, a central (Nomlaki) group, and a northern (Wintu) group. Subsistence for the Wintu and Nomlaki was based on three main staples: deer, acorns, and salmon. The earliest contact of the Wintu and Nomlaki with Euroamericans was probably with hunters, trappers, and explorers during the 1820s and 1830s. A malaria epidemic in 1833 killed an estimated 75 percent of the Sacramento Valley indians, completely depopulating many Nomlaki and Wintu villages. After the arrival of miners and settlers, the Nomlaki and Wintu suffered further reductions in population and eventually the surviving members were moved to reservations and camps.

The Patwin inhabited the region from Princeton to Benicia. Several of the major settlement areas, particularly those near the Sacramento River and San Francisco Bay resources, were very populous. The growth of missions within California had significant long-term impacts on the Patwin. Introduced diseases, such as measles and smallpox, were instrumental in reducing the Indian population to the point that established cultural traditions and settlement systems could no longer be maintained. The onslaught of Euroamericans during the late 1940s, coupled with the gold rush beginning in 1849, eliminated the Patwin culture. By 1871-1872, the Patwin culture no longer existed.

The "Wappo" is an Anglicized derivation of the Spanish word "guapo", which was a relatively small Native American group. The Wappo occupied territory that extended from present-day Napa north to the vicinity of Middletown and Geyserville, and also along the southern shore of Clear Lake.

The Achumawi and Atsugewi of northeastern California are two distinct but related groups. Inter-marriage could occur between villages and between the Atsugewi and Achumawi. The Atsugewi probably first came into contact with Euroamericans in 1827-1828. Fighting between settlers and the Atsugewi in the late 1850s resulted in many deaths, and most of the surviving Atsugewi were transported to the Round Valley Reservation.

The Shasta peoples inhabited Shasta Valley, Scotts Valley, and along the Klamath River. Primary subsistence staples were deer and acorns. In the 1820s and 1830s, the Shasta people first came into contact with Euroamericans who were working as fur trappers in that region. In the 1850s, their population was greatly diminished by the Rogue River Indian wars and by hostilities from miners and settlers. By the 20<sup>th</sup> century, the Shastan language was virtually extinct, and little of the aboriginal culture remained.

The Yokuts inhabited the San Joaquin Valley and Sierra Nevada foothills of central California. The Yokuts culture consists of three primary divisions: Southern San Joaquin Valley Yokuts, the Northern San Joaquin Valley Yokuts, and the Foothill Yokuts. The Yokuts were seasonally mobile hunter-gatherers with semi-permanent villages. They first came into contact with Europeans in the late 1700s. The loss of individuals to the missions, various epidemics in the 1800s, and the arrival of settlers and miners all contributed to the disintegration of Yokuts culture.

The Miwok includes a large and diverse number of peoples inhabiting coastal and central California. The Miwok were seasonally mobile hunter-gatherers with semi-permanent villages. Acorns were the staple food resource. Early contact between Miwok and Europeans occurred first as early as 1579 in the coastal areas and in inland areas as late as

the late 1700s. In the middle to late 1800s, the Miwok were forced from their land, killed, and fell victim to various epidemics because of the arrival of settlers, ranchers, and miners.

The Monache, or Western Mono, are six separate groups who are linguistically affiliated. The Monache lived on the west slopes of the Sierra Nevada. They were seasonally mobile hunter-gatherers. Acorns were their dietary staple. Prior to Euroamerican contact, the areas of the Monache and Yokuts were among the most heavily populated areas in California.

The Tubatulabal lived in the area from Mt. Whitney to the north, Walker Pass to the east, and the San Joaquin Valley to the west. They subsisted by hunting, gathering, and fishing, with pinyon pine nuts and acorns as their staples. First contact with Euroamericans was circa 1850.

The Kitanemuk are thought to have close ties and cultural traits in common with the tubatulabal. The core area of the Kitanemuk people was the Tehachapi Mountains at the southern end of the San Joaquin Valley. It is believed that the Kitanemuk were assimilated into various missions, which effectively destroyed their culture (USBR, 1997).

### 3.3.7.5 Prehistoric and Historic Sites

Table 3-5 presents a list showing the number of prehistoric and historic sites identified in the counties within the CVP area.

Table 3-5 Prehistoric Sites and Historic Sites in the CVP Area			
County	Prehistoric Sites	Historic Sites	Themes of Historic Sites
El Dorado	851	256 sites or historic components of the 851 prehistoric sites	Architecture, economic/industrial, exploration/settlement, government, religion, and social/education
Sacramento	435	28 sites or historic components of the 435 prehistoric sites	Aboriginal, architecture, arts/leisure, economic/industrial, exploration/settlement, government, military, religion, and social/education
Colusa	199	84 sites or historic components of the 199 prehistoric sites	Aboriginal, architecture, economic/industrial, exploration/settlement, government, and religion
Glenn	474	101 sites or historic components of the 474 prehistoric sites	Economic/industrial, exploration/settlement, and government
Shasta	2,104	721 sites or historic components of the 2,104 prehistoric sites	Aboriginal, architecture, economic/industrial, exploration/settlement, military, religion, and social/education
Tehama	1,615	200 sites or historic components of the 1,615 prehistoric sites	Architecture, economic/industrial, exploration/settlement, government, military, religion, and social/education
Yolo	181	6 sites or historic components of the 181 prehistoric sites	Architecture, arts/leisure, economic/industrial, exploration/settlement, government, religion, and social/education
Fresno	2,891	288 sites or historic components of the 2,891 prehistoric sites	Architecture, arts/leisure, economic/industrial, exploration/settlement, military, religion, and social/education

County	Prehistoric Sites	Historic Sites	Themes of Historic Sites
Merced	341	25 sites or historic components of the 341 prehistoric sites	Aboriginal, architecture, economic/industrial, exploration/settlement, government, and religion
San Joaquin	249	60 sites or historic components of the 249 prehistoric sites	Architecture, economic/industrial, exploration/settlement, military, religion, and social/education
Stanislaus	350	70 sites or historic components of the 350 prehistoric sites	Aboriginal, economic/industrial, and exploration/settlement

### 3.3.8 Land Use

City and county planning authorities regulate land planning and land development activities within boundaries of CVP water contractor service areas. Each county or city general plan identifies the land use designation and describes the land use intentions for particular areas and parcels of land.

Because each county or city land planning authority operates independently, land use designations range in scope from specific (allowable activities, intensity, or density) to broad (the county's general intentions for the land use). The county-designated land uses for each of the CVP water contractors affected by Reclamation's CPOU petition are described in Section 3.4.

Land uses within the boundaries of each water contractor service area are managed by the county or city having jurisdiction over land use decisions in that area. Generally, CVP water contractors do not have jurisdiction over land use, except when the water contractor is the county or a municipal entity. CVP water contractors normally have only decision making authority regarding issues associated with the boundaries of their service areas and the installation, construction, and operation of facilities and equipment needed to supply water users. In some instances, a CVP water contractor, such as the Santa Clara Valley Water District (SCVWD), is a wholesaler of M&I water in Santa Clara County. SCVWD provides water to municipal and private water companies that have the decision making authority regarding their retail service areas and the facilities needed to supply water to the retail water customers.

Reclamation does not have authority over land use activities within the service area boundaries of the water contractors, except for ensuring compliance with water delivery contract terms that specify the type of use for which CVP water is being delivered.

Of the encroachment area, 56,543 acres are in agricultural land uses, and 60,121 acres are in municipal and industrial land uses. Of the expansion area, 32,696 acres are in agricultural land uses, 1,914 acres are in municipal and industrial land uses, and 683,393 acres are undeveloped lands.

### 3.3.9 Recreation and Visual Resources

#### 3.3.9.1 Recreational Resources of Lands Outside the Authorized POU and Water Features

Recreational resources can be separated into two categories: recreational opportunities associated with reservoirs and rivers, and recreational opportunities associated with lands outside the authorized POU.

Recreational opportunities associated with reservoirs and rivers include (1) water-dependent recreational activities such as swimming, boating, rafting, and fishing; and (2) water-enhanced recreation activities such as picnicking, camping, hiking, photography, and sightseeing. Recreational opportunities associated with lands outside the authorized POU include municipal recreational resources consisting of developed parks and facilities designed to provide an organized recreational experience, and dispersed recreational opportunities, such as hiking, hunting, and other activities associated with open space that are allowed on undeveloped lands.

Recreational resources are widely distributed throughout the authorized POU. Water features providing recreational opportunities that have the potential to be affected by operational changes resulting from Reclamation's CPOU petition include Shasta Lake, Whiskeytown Lake, Clair Engle Reservoir, Folsom Reservoir, San Luis Reservoir, American River, Sacramento River, and the Sacramento-San Joaquin Delta. Recreational opportunities on municipal or undeveloped lands throughout the authorized POU consist of national, community, or private recreation areas; wildlife refuges; river accesses; and golf courses.

#### 3.3.9.2 Visual Resources of Lands Outside the Authorized POU and Water Features

The visual quality of lands outside the authorized POU and water features varies because of the relative distance from urban and undeveloped areas; the topography, and complexity of the landscape; the current and historical land uses of the affected lands; and viewers' sensitivity to visual change. A general summary of the visual quality of lands outside the authorized POU is provided below by land use type.

Agricultural lands, usually located on gentler slopes, often cannot be viewed from distant locations, and are typically near or adjacent to other agricultural lands. Although agricultural practices alter the visual character of the landscape by creating expansive acreage of similar color, landform, line, and texture, the associated pastoral setting often contrasts less with the adjacent agricultural landscape than with different land use activities. Irrigated agriculture and dryland agriculture, although substantially different in agricultural practices and cropping patterns, have similar visual characteristics.

Municipal and industrial lands outside the authorized POU vary considerably in character. Municipal land uses consist of rural residential development, small communities, or larger urban environments. Industrial uses may range from isolated industrial facilities associated with agricultural production to large oil well fields or densely concentrated industrial complexes within urban centers. Each of these areas retains an individual visual quality that is associated with its use.

In many cases, rural residential areas are assigned a high visual quality if the area provides a diverse combination of the human-made and natural environments. Viewers often assign a high aesthetic value where this diversity creates a complex landscape with components that complement each other. In areas where dense concentrations of industrial development dominate the landscape and are accompanied by noise and odor, viewers tend to assign a low aesthetic value.

Lands with native vegetation, undisturbed surfaces, changes in topography, or a location near water features typically provide the greatest variety of color, form, line, and texture. In areas where vegetation is diverse, color, form, line, and texture are rated high. In areas dominated by grassland or savannah vegetation types, form and texture create the most dominant visual components. Undeveloped lands exhibit a wide variety in form, seasonal variation in vegetative cover, and distribution of vegetation.

### 3.3.10 Economics

The CVP contractors affected by Reclamation's CPOU petition are distributed throughout 18 counties. Because the contractors are scattered throughout such a large area, socioeconomic information was compiled on a countywide basis (Table 3-6).

County	CVP Water Contractor	Economic Characteristics
Alameda County	East Bay Municipal Utility District	Heavy industry, manufacturing, computer services, and biotechnology are some of the important industries in the county. The Dublin, Pleasanton, and Livermore Valley areas once exhibited agricultural and rural characteristics, but is transforming into a residential, commercial, and industrial part of Alameda County. Services provide 26 percent of the jobs; government provides 21 percent; retail trade provides 16 percent; manufacturing provides 14 percent; and mining and construction, transportation, utilities, finance, and wholesale trade all contribute minor amounts of employment opportunities in the county (Employment Development Department, 1994a).
Colusa County	Colusa County Water District, Glenn Valley Water District, and Westside Water District	Agriculture has been its primary industry since the 1850s. In 1980, approximately 40 percent of the wage and salary employees were engaged in farming activities (University of California, 1982). Nonagricultural employment primarily consists of retail trade and government services (Employment Development Department, 1989a).
Contra Costa County	Contra Costa Water District and East Bay Municipal Utility District	The County's principal industries are petroleum refining and manufacturing, although agriculture is still a significant source of income. Agricultural uses occupy about 50 percent of the area in the county, with commercial agricultural acreage generally located in the eastern portion of the county and the western area highly urbanized (University of California, 1982).
Fresno County	City of Avenal, City of Coalinga and its associated service area, San Luis Water District, and Westlands Water District	Two-thirds of the county remains in a natural or semi-natural condition; the remaining one-third is extensively developed for agriculture and industry. Agriculture in the county generates over \$1 billion annually. Since 1950, the county has ranked as the first county in the United States in terms of annual gross value of agricultural production (University of California, 1982).

Table 3-6 Economic Characteristics of Counties with CVP Water Contractors with Land Outside the POU		
County	CVP Water Contractor	Economic Characteristics
Glenn County	Kanawha Water District and Orland-Artois Water District	Timber production contributes to the local economy with lumber from pine, fir, and cedar. Cattle and sheep production are an important part of the county's agriculture; however, field crops are the most important agricultural product (University of California, 1982).
Kern County	Arvin-Edison Water Storage District	Agriculture and oil have been the economic base for Kern County since the early 1900s. In 1979, 20 percent of the county's wage and salary employment was generated by agriculture (University of California, 1982).
Kings County	City of Avenal and Westlands Water District	Kings County is primarily farmland; over 85 percent of the land area is in farms. Agriculture is the county's single most important industry. Approximately 33 percent of the wage and salary employees in Kings County were employed in agriculture in 1979; government was the next largest employer (23 percent) (University of California, 1982).
El Dorado County	El Dorado Irrigation District	Tourism is the county's economic base. More than 50 percent of the employment in the county in recent years has been in services, retail trade, and government (the industries that provide most of the tourism-related services to the region's visitors) (Employment Development Department, 1992).
Merced County	Del Puerto Water District and San Luis Water District	About 27 percent of the land area in the county is harvested cropland; approximately 45 percent of the county area is unirrigated rangeland. Livestock industries are very important in Merced County, with dairying, beef cattle, and poultry producing the greatest gross revenues. In addition, some crops, such as almonds, cotton, and alfalfa, are grown (University of California, 1982).
Sacramento County	El Dorado Irrigation District and Sacramento Municipal Utility District	Sacramento County has a fairly diversified economy. Trade and services provide more than 40 percent of all of the jobs, and government provides another 33 percent (Employment Development Department, 1989b). Sacramento is the center of state government, the county seat, the service center for the northern Central Valley, and a processing center for agricultural products. In addition, two major military installations currently subject to closure actions, McClellan and Mather Air Force Bases, are located within its boundaries. Harvested cropland makes up about 28 percent of the total land area; unirrigated rangeland occupies about 27 percent. Extensive residential and commercial development has contributed to some decline in agricultural land use (University of California, 1982).
San Benito County	San Benito County Water District and Santa Clara Valley Water District	San Benito County is an agriculturally oriented county, with approximately 40 percent of employment accounted for by agriculture. Cattle are also raised in the county, although gross income produced from livestock and their products is less than that from cultivated crops (University of California, 1982).
San Joaquin County	Del Puerto Water District	Crops, livestock, and poultry are the mainstays of the agricultural economy and contribute to the county's ranking among the state's top 10 counties in gross farm receipts. The county is a leading agricultural producer, but it is undergoing a transformation to a more industrial and service economy (Sedway Cooke Associates, 1989). Agriculture employed 15 percent of the wage and salary employees in 1980. Principal nonagricultural sources of employment were wholesale and retail trade, government, services, and manufacturing (University of California, 1982).
Santa Clara County	San Benito County Water District and Santa Clara Valley Water District	Santa Clara County is one of the leading areas in the state for light industry. Manufacturing is the county's largest employer, accounting for over one-third of the wage and salary employment. Agricultural trends toward fruits, vegetables, nuts, poultry, and dairy products have either disappeared or declined, and more intensive uses, such as nurseries or seed crops, have been initiated (University of California, 1982).

Table 3-6 Economic Characteristics of Counties with CVP Water Contractors with Land Outside the POU		
County	CVP Water Contractor	Economic Characteristics
Santa Cruz County	Santa Benito County Water District	Two-thirds of the county is considered forest land by the U.S. Department of Agriculture. Santa Cruz County is known as a vacation and recreation area. Several state parks and state beaches are located within the county. The southern portion of the county is a productive agricultural district. Food canning and freezing industries are located in or near Watsonville. Electronics-related, manufacturing, computer services, and educational services industries are scattered throughout the county. Services provide 28 percent of the jobs; retail trade provides 22 percent; government provides 20 percent; manufacturing provides 15 percent; and mining and construction, transportation, public utilities, finance, and wholesale trade all contribute minor amounts of employment opportunities in the county (Employment Development Department, 1994b).
Shasta County	Anderson-Cottonwood Irrigation District, Bella Vista Water District, Mountain Gate Community Services District, Shasta County Service area No. 6—Jones Valley, Shasta County Service Area No. 25—Keswick, Shasta Community Services District, City of Shasta Lake, and Silverthorn Summer Homes, Inc.	Nearly half of the county land area is classified as commercial forestland; therefore, lumbering is a primary economic activity. In addition, agriculture and livestock grazing are found within the county (University of California, 1982).
Stanislaus County	Del Puerto Water District	Dairy products are the most important source of agricultural revenue. The county is an important agricultural processing center and also has several manufacturing plants (University of California, 1982).
Tehama County	Anderson Cottonwood Irrigation District and Coming Water District	Agriculture is the major focus of Tehama County's economic base (Tehama County, 1983). Timber products contribute significantly to Tehama County's economy. Sheep and cattle raising, olive processing and packing, nut production, and rangeland forage are also important in the county.
Yolo County	Colusa County Water District	Yolo County's economy is primarily agricultural, with a relatively high number of jobs based on activities relating to the production or processing of farm products. Nonagricultural employment includes primarily state and local government and retail trade (Employment Development Department, 1989c).

### 3.4 Environmental Setting Within the CVP Water Contractor Service Areas

This section describes the environmental setting of areas outside the authorized POU that are within the contract service area boundaries of the 26 CVP water contractors. This information supplements the general environmental setting discussion previously presented, and provides a more detailed description of environmental conditions within each CVP water contractor service area that would be affected by the Proposed Project and alternatives.

Table 3-7 summarizes the existing land uses on encroachment lands (lands that have received CVP water) and expansion lands (lands that have never received CVP water) in the 26 CVP water contractor service areas.

CVP Water Contractor	Total Acreage	Encroachment Lands				Expansion Lands		
		CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I	AG	M&I	Native Veg.
Anderson-Cottonwood Irrigation District	230	0	0	0	0	230	0	0
Arvin-Edison Water Storage District	3,847	0	820	0	1,281	0	0	1,746
Avenal, City of	34,690	0	0	0	3,124	6,347	0	25,219
Bella Vista Water District	1,281	0	0	0	1,021	0	0	260
Coalinga, City of	92,007	0	0	0	4,674	23,401	0	63,932
Colusa County Water District	2,147	0	1,499	0	0	0	0	648
Contra Costa Water District	1,031	0	0	0	0	0	0	1,031
Corning Water District	2,034	0	1,647	0	0	0	0	387
Del Puerto Water District	1,000	0	808	0	0	192	0	0
East Bay Municipal Utility District	1,494	0	0	0	0	0	1,494	0
El Dorado Irrigation District	23,578	0	0	0	18,495	0	0	5,083
Glenn Valley Water District	248	0	0	0	0	118	0	130
Kanawha Water District	902	689	0	0	0	0	0	213
Mountain Gate Community Services District	3,992	0	0	0	1,406	0	0	2,586
Orland-Artois Water District	111	0	111	0	0	0	0	0
Sacramento Municipal Utility District	2,830	0	0	2,830	0	0	0	0
San Benito County Water District	5,107	0	2,564	0	0	1,973	420	150
San Luis Water District	9,609	0	9,609	0	0	0	0	0
Santa Clara Valley Water District	592,988	0	2,171	0	25,498	0	0	565,319
Shasta Community Services District	51	0	0	0	0	0	0	51

CVP Water Contractor	Total Acreage	Encroachment Lands				Expansion Lands		
		CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I	AG	M&I	Native Veg.
Shasta County Service Area No. 6 - Jones Valley	1,171	0	0	0	668	0	0	503
Shasta County Service Area No. 25 - Keswick	3,635	0	0	0	918	0	0	2,717
Shasta Lake, City of	231	0	0	0	118	0	0	113
Silverthorn Summer Homes, Inc.	55	0	0	55	0	0	0	0
Westlands Water District	49,401	36,386	0	33	0	250	0	12,732
Westside Water District	997	0	239	0	0	185	0	573
<b>TOTAL</b>	<b>834,667<sup>a</sup></b>	<b>37,075</b>	<b>19,468</b>	<b>2,918</b>	<b>57,203</b>	<b>32,696</b>	<b>1,914</b>	<b>683,393</b>

<sup>a</sup>The sum of the total acreages for each water contractor does not equal the 834,667 total acreage because the City of Avenal's and Westlands Water District's boundaries overlap by 42 acres, and the City of Coalinga's and Westlands Water District's boundaries overlap by 7,160 acres.

As shown, encroachment lands are divided into three categories consisting of:

- CVP-Induced Agriculture - Lands that were not developed for agricultural use prior to the introduction of CVP water supplies.
- Non-CVP Agriculture - Lands that were developed for agricultural use prior to the introduction of CVP water supplies.
- M&I - Lands that were developed for M&I land uses, which have been addressed by local land management agencies in accordance with CEQA.

Table 3-7 also lists expansion lands divided into three categories that describe their current land use (agricultural [AG], M&I, and native vegetation [NV]). As indicated above, none of the expansion lands currently receive CVP water supplies.

### 3.4.1 Anderson-Cottonwood Irrigation District

Anderson-Cottonwood Irrigation District (ACID) entered into a long-term water service contract (No. 14-06-200-3346A) with Reclamation for CVP water delivery on June 6, 1967.

#### 3.4.1.1 General Description and Location

ACID is located near the northern boundary of the Sacramento Valley, south of the City of Redding. The ACID service area covers 33,240 acres. Of this total, about 230 acres are located outside the authorized POU. These lands are shown in Figure 3-2.

#### 3.4.1.2 Land Use and Land Use Policies

The ACID service area is located within unincorporated lands of Shasta and Tehama counties. The two County General Plans designate these lands for agricultural, rural residential, and open space. The Shasta County General Plan also allows urban, commercial, and industrial land uses within the CVP contract service area. All of the 230 acres are expansion lands that are currently irrigated agriculture.

The irrigated land in the ACID contract service area consists primarily of pasture and forage crops. It is estimated that about 113 acres are used for these crops, with the remainder used to grow fruits and nuts, vegetables, cereal grains, and other field crops.

#### 3.4.1.3 Geology and Soils

ACID is located on alluvial deposits composed of terraces, floodplains, and valley bottoms. Soils consist of primarily clay loams and recent alluvial deposits on stream terraces. These soils have moderate agricultural capabilities that are sometimes limited by permeability rates.

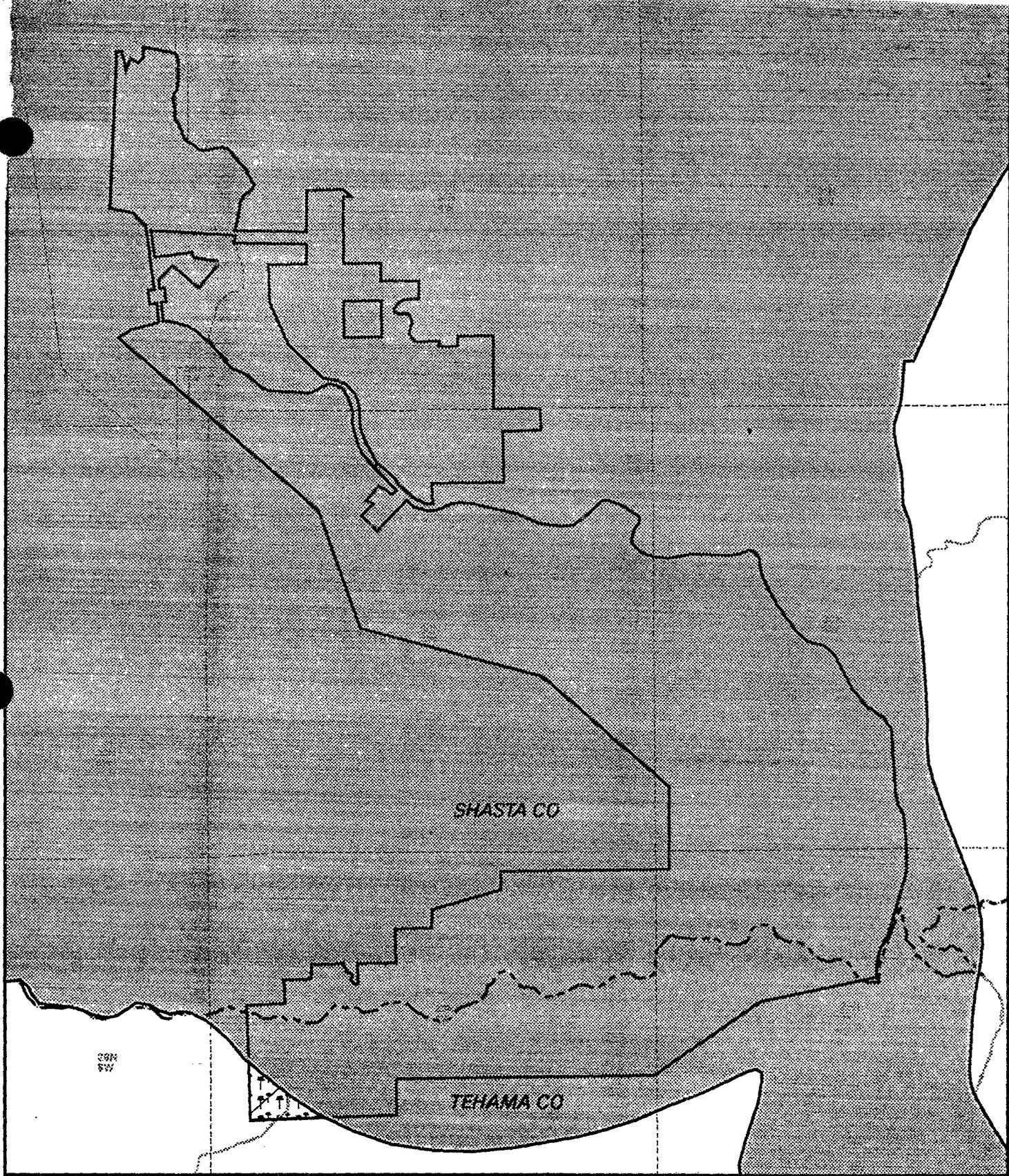
#### 3.4.1.4 Water Resources and Water Use

ACID has a contract for the delivery of 10,000 acre-feet of CVP water. CVP water can only be used for agricultural purposes consistent with the CVP contract terms.

No CVP water is currently delivered to lands outside the authorized POU. The source of water for those lands currently irrigated outside the authorized POU is either groundwater or water pursuant to ACID's pre-1914 water right. Some individuals residing within the ACID boundary also have installed groundwater wells to support domestic land uses.

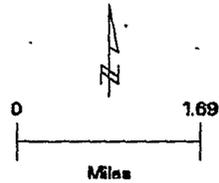
#### 3.4.1.5 Groundwater Resources

ACID lands outside the authorized POU have access to an unknown amount of water from private groundwater wells. However, the quantity of groundwater appears to be limited. There is no indication that groundwater use in this region would be restricted by water quality.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Anderson-Cottonwood Irrigation District  
Figure 3-2



### 3.4.1.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-8 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 18 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	0	121	121
Valley-foothill riparian/fresh emergent wetland	0	0	0	0	5	5
Annual grassland	0	0	0	0	104	104
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>230</b>	<b>230</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Of the species listed in Table D-2, the species in Table 3-9 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the California Natural Diversity Database (CNDDDB), no special-status species have been observed on lands within the ACID CVP contract service area outside the authorized POU.

### 3.4.1.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the authorized POU. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering prehistoric sites.

Habitat	Species	Status
Valley-foothill riparian/fresh emergent wetland	Valley elderberry longhorn beetle	State: -- Federal: Threatened
Valley-foothill riparian/fresh emergent wetland	California red-legged frog	State: Species of Special Concern Federal: Threatened
Annual grassland	Vernal pool fairy shrimp	State: -- Federal: Threatened
Annual grassland	Vernal pool tadpole shrimp	State: -- Federal: Endangered
Annual grassland	Conservancy fairy shrimp	State: -- Federal: Endangered
Fresh emergent wetland	Bogg's Lake hedge-hyssop	State: Endangered Federal: --
Species listed are in accordance with the state and federal Endangered Species Acts.		

### **3.4.2 Arvin-Edison Water Storage District**

Arvin-Edison Water Storage District (Arvin-Edison) entered into a long-term water service contract (No. 14-06-200-229A) with Reclamation for CVP water delivery on August 30, 1962, and it was amended on February 27, 1968. Arvin-Edison's original water service contract expired on February 28, 1995. That contract was renewed for an interim period of 3 years effective February 27, 1995 (No. 14-06-200-229A-IR1).

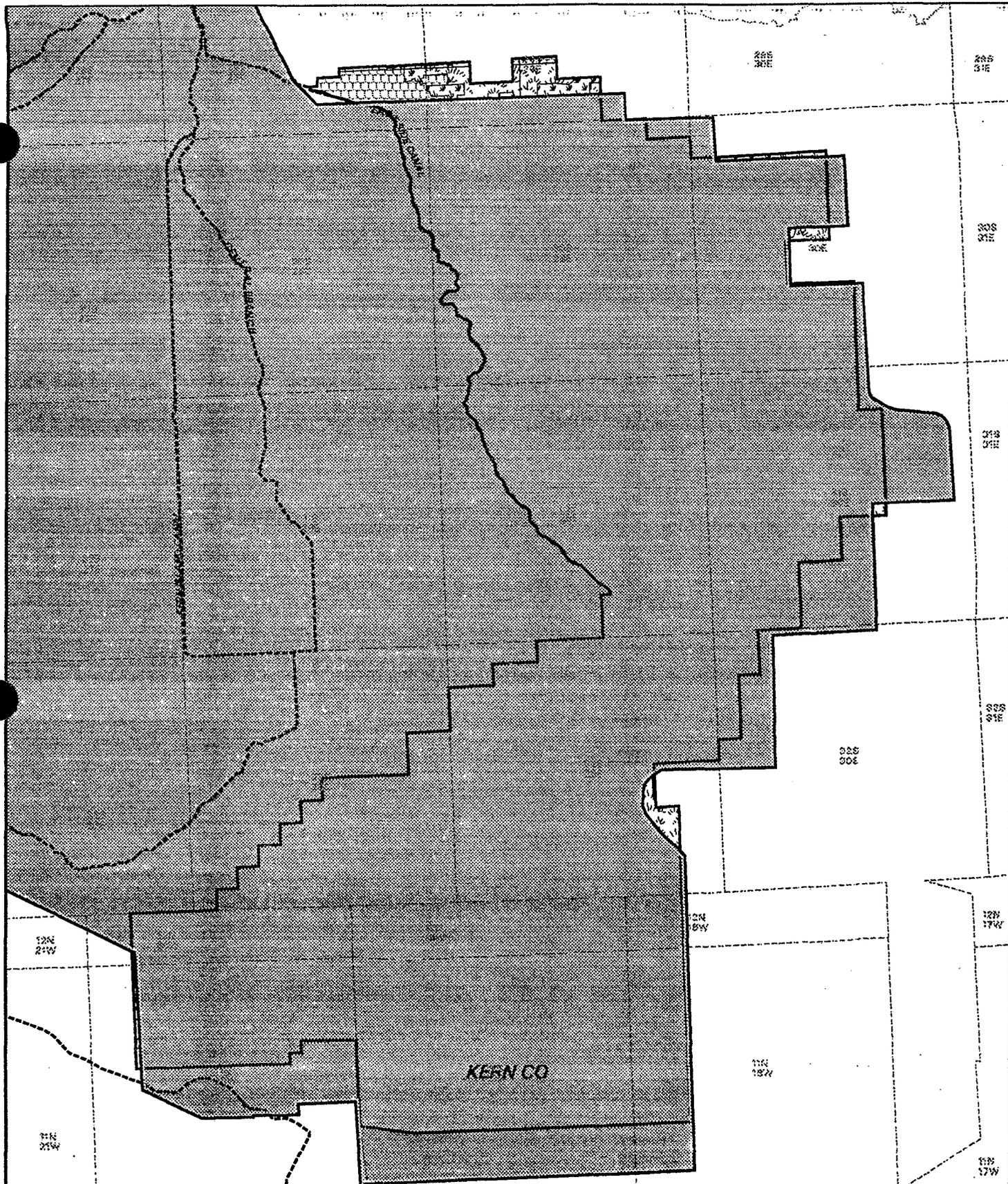
#### **3.4.2.1 General Description and Location**

Arvin-Edison is located near the southern boundary of the San Joaquin Valley, just southeast of Bakersfield. The Arvin-Edison service area covers 132,848 acres. Of this total, about 3,847 acres are located outside the authorized POU. These lands are shown in Figure 3-3.

#### **3.4.2.2 Land Use and Land Use Policies**

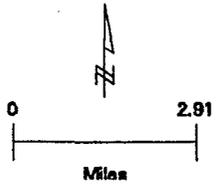
The Arvin-Edison service area is located within unincorporated lands of Kern County. The County General Plan designates these lands for primarily agricultural and M&I uses. The County General Plan also allows mineral and petroleum extraction uses within the CVP contract service area.

Of the 3,847 acres located outside the authorized POU, 2,101 acres are encroachment lands and 1,746 acres are expansion lands. 820 acres are in an irrigated agricultural land use, 1,281 acres correspond to a municipal/industrial land use, and the remaining 1,746 acres are undeveloped and support native vegetation. Prior to the mid-1960s, the agricultural land outside the authorized POU was dryland farmed. The irrigated land in Arvin-Edison's contract service area supports primarily oranges and grapes. Arvin-Edison's surface water service area includes 52,716 acres, and 78,944 acres are included in the groundwater service area.



-  Existing Permitted Place of Use
-  Irrigated CVP
-  Non-CVP Water Service
-  Municipal & Industrial CVP
-  Dryland Agriculture
-  Native Vegetation
-  Place Of Use Boundary
-  Contract Service Area
-  Canals
-  County Boundary

Arvin-Edison Water Storage District  
Figure 3-3



### 3.4.2.3 Geology and Soils

The majority of Arvin-Edison is comprised of alluvial fans and plains, basin rims, terraces, and floodplains. The soils associated with these areas are primarily well-drained sandy loams, silt loam, and clay loam (USDA, 1988).

### 3.4.2.4 Water Resources and Water Use

Arvin-Edison has a contract for the delivery of 40,000 acre-feet of firm (Class 1) water; an additional 311,675 acre-feet of non-firm (Class 2) water is available on an erratic basis. CVP water use is restricted to agricultural and M&I purposes consistent with the CVP contract terms. Arvin-Edison historically has been delivered on the average 171,000 acre-feet of water per year.

Arvin-Edison has made water deliveries from a variety of sources over the last 30 years, including but not limited to, the CVP-Friant-Kern Canal, the Cross Valley Canal, and non-CVP water from the Kern River or the local groundwater basin.

Arvin-Edison historically has regulated its erratic Friant-Kern supply through its conjunctive use program and its exchange program. The exchange program involves delivering a portion of its Friant supply to exchange contractors along the Friant-Kern Canal and taking delivery of exchanger's westside CVP supply through the Cross Valley Canal.

### 3.4.2.5 Groundwater Resources

Arvin-Edison uses surface water on lands outside the authorized POU and also has a groundwater program that allows delivery through canals to the areas outside the local authorized POU.

Arvin-Edison's conjunctive use program involves storing wet-year imported water in excess of coincident irrigation demand in two spreading basins that have associated wellfields and extracting stored water in dry years for delivery to the surface water service area.

During dry years, deliveries consist of a blend of surface water and stored water extracted from its wellfields. Growers in the groundwater service area benefit from in-lieu recharge in the surface water service area and from water stored in the two spreading basins.

### 3.4.2.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-10 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill riparian/fresh emergent wetland	0	3	0	0	11	14
Alkali scrub	0	181	0	0	96	277
Annual grassland	0	636	0	1,281	1,639	3,556
<b>TOTAL</b>	0	820	0	1,281	1,746	3,847

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 24 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-11 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Habitat	Species	Status
Alkali scrub	Blunt-nosed leopard lizard	State: Endangered Federal: Endangered
Alkali scrub	Tipton kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub	San Joaquin kit fox	State: Threatened Federal: Endangered
Alkali scrub Annual grassland	Hoover's eriastrum	State: -- Federal: Threatened
Alkali scrub Annual grassland	San Joaquin woolly-threads	State: -- Federal: Endangered
Alkali scrub Annual grassland	California jewelflower	State: Endangered Federal: Endangered
Annual grassland	San Joaquin adobe sunburst	State: Endangered Federal: Endangered
Valley-foothill riparian/fresh emergent wetland	Striped adobe lily	State: Threatened Federal: Proposed Threatened
Valley-foothill riparian/fresh emergent wetland	Western yellow-billed cuckoo	State: Endangered Federal: --

Species listed are in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, the San Joaquin woolly-threads, California jewelflower, Vasek's clarkia, and Bakersfield cactus have been observed on lands within the CVP contract service area outside the POU.

### **3.4.2.7 Cultural Resources**

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a moderate to high archaeological sensitivity with a high probability of encountering one to five prehistoric sites containing historic-era sites or features.

### **3.4.3 City of Avenal**

The City of Avenal (Avenal) entered into a long-term water service contract (No. 14-06-200-4619A) with Reclamation for CVP water delivery on November 20, 1969. Avenal began delivery of the M&I water in March 1972.

#### **3.4.3.1 General Description and Location**

Avenal is located near the southern boundary of the San Joaquin Valley. The Avenal service area covers 46,871 acres. Of this total, about 34,732 acres are located outside the authorized POU. These lands are shown in Figure 3-4.

#### **3.4.3.2 Land Use and Land Use Policies**

The Avenal service area is located within incorporated lands of the City of Avenal, as well as within the unincorporated lands of Kings and Fresno counties. The Kings County General Plan designates these lands for primarily agricultural and M&I uses, and also allows mineral resources, public lands, and open space uses within the CVP contract service area. The Fresno County General Plan allows mineral resources and flood zone land uses.

Avenal covers 19.5 square miles. Outside the city, land is used primarily for farming, oil and gas extraction, and grazing. The irrigated land in this service area was developed and is being farmed with non-CVP water except for small areas along the northeast boundaries of the service area. Those small areas that receive CVP water for irrigation obtain the water through a contract with Westlands Water District and are addressed in Section 3.4.25 of this EIR.

The Avenal contract service area includes a state prison, a Pacific Gas and Electric (PG&E) gas compressor station, and a chemical waste treatment facility.

Of the 34,732 acres located outside the authorized POU, 3,124 acres are encroachment lands and 31,566 acres are expansion lands. 6,347 acres are in an irrigated or dryland agricultural land use that do not use CVP water; 3,124 acres correspond to an M&I land use; 25,219 acres are undeveloped and support native vegetation; and about 42 acres are in both the City of Avenal and Westlands Water District service areas. The land use of the 42 acres is undeveloped, supporting native vegetation.

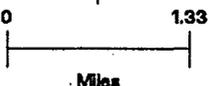
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FRESNO CO

KINGS CO

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- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Place Of Use Boundary |
|  | Irrigated CVP                   |  | Contract Service Area |
|  | Non-CVP Water Service           |  | Canals                |
|  | Municipal & Industrial CVP      |  | County Boundary       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | See Westlands map               |   |                       |



City of Avenal  
Figure 3-4



C - 0 9 3 4 8 3

These overlapping lands are included in the discussion of Westlands Water District acreages presented in Section 3.4.25 in this EIR.

### 3.4.3.3 Geology and Soils

The majority of the Avenal area is a mixture of alluvial fans, floodplains, and terraces. Soils of alluvial fans and floodplains are usually deep, well-drained, non-saline, and non-alkali. Soils of terraces with dense clay subsoils have problems because of shallow depth, low fertility, and available moisture-holding capacity. High terraces are well-drained, non-saline, non-alkali, and medium-textured soils with dense clay subsoils (USDA, 1973).

### 3.4.3.4 Water Resources and Water Use

Avenal has a contract for the delivery of 3,500 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. Avenal has historically used up to its full contract amount.

CVP water is delivered mainly within Avenal and to the state prison. The town was developed and thrived for many years on water supplied by sources other than CVP. The local groundwater is not potable. Prior to CVP deliveries, water was delivered to Avenal from Kettleman City.

In 1994, Avenal's water distribution in the contract service area included 807 acre-feet for the city, 932 acre-feet for the state prison, 28 acre-feet for the Interstate-5 (I-5) rest stop, 10 acre-feet for the PG&E compressor station, 52 acre-feet for the chemical waste facility, and 59 acre-feet for domestic deliveries outside the city limits.

### 3.4.3.5 Groundwater Resources

Avenal lands located outside the authorized POU are currently supplied, in part, by an unspecified amount of groundwater. However, because of current rates of groundwater overdraft in this region, this source is not considered to be an available long-term supply. There is no indication that groundwater use would be limited by water quality issues.

### 3.4.3.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-12 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 21 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agric.	CVP-Induced M&I	Non-CVP-Induced M&I		
Alkali scrub	0	0	0	644	866	1,510
Annual grassland	0	0	0	2,455	30,235	32,690
Valley-foothill riparian/ fresh emergent wetland	0	0	0	25	465	490
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,124</b>	<b>31,566<sup>b</sup></b>	<b>34,690</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).  
<sup>b</sup>This total does not include the 42 acres of habitat that overlap with Westlands Water District. The habitats of the 42 acres are included in Table 3-43.

Of the species listed in Table D-2, the species in Table 3-13 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Habitat	Species	Status
Alkali scrub	Blunt-nosed leopard lizard	State: Endangered Federal: Endangered
Annual grassland Fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Alkali scrub	Fresno kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	California jewelflower	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin woolly-threads	State: -- Federal: Endangered
Alkali scrub Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Alkali scrub Annual grassland	San Joaquin antelope squirrel	State: Threatened Federal: Species of Concern

Species listed are in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDB, the blunt-nosed leopard lizard, San Joaquin antelope squirrel, San Joaquin pocket mouse, burrowing owl, and San Joaquin woolly-threads have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.3.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the

authorized POU. These lands were determined to have a low archaeological sensitivity with a low probability of encountering prehistoric sites.

### **3.4.4 Bella Vista Water District**

Bella Vista Water District (BVWD) entered into a long-term water service contract (No. 14-06-200-851A) with Reclamation for CVP water delivery on April 3, 1964. BVWD's original water service contract expired on December 31, 1994. That contract was renewed for an interim period of 3 years effective January 1, 1995 (No. 14-06-200-851A-IR1).

#### **3.4.4.1 General Description and Location**

BVWD is located near the northern boundary of the Sacramento Valley, northeast of the City of Redding. The BVWD service area covers 33,813 acres. Of this total, about 1,281 acres are located outside the authorized POU. These lands are shown in Figure 3-5.

#### **3.4.4.2 Land Use and Land Use Policies**

The BVWD service area is located within unincorporated lands of Shasta County. The County General Plan designates these lands for primarily rural residential uses. The County General Plan also allows agricultural grazing uses within the CVP contract service area.

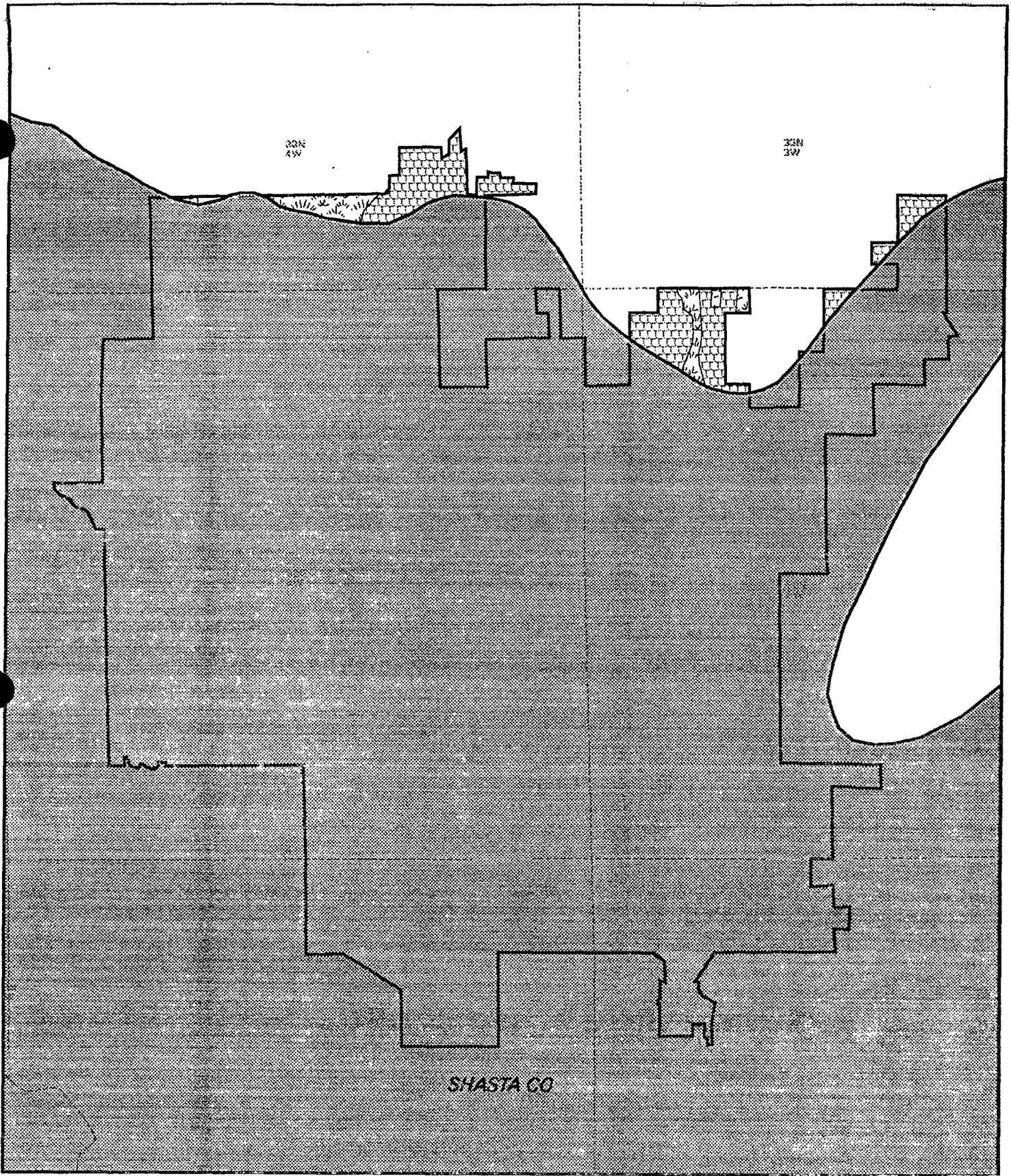
Of the 1,281 acres located outside the authorized POU, 1,021 acres are encroachment lands and 260 acres are expansion lands.

Only 308 acres of the area outside the authorized POU were added since BVWD's formation in 1964. Two acres are currently idle, 10 acres are Class 6 lands, and the remaining 296 acres have approximately 31 rural residences using approximately 22 acre-feet of CVP water since 1986 and 1987.

The remaining 973 acres outside the authorized POU were part of the original BVWD service area. About 170 acres were historically cultivated, using a non-CVP source, of which 90 acres currently receive approximately 397 acre-feet of CVP water. The remaining acreage is idle or natural habitat. Approximately 39 rural residences use 28 acre-feet of CVP water annually.

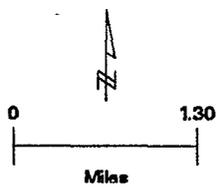
The contract service area includes two colleges, which use both irrigation and M&I water, and approximately 27 users that use 20 acre-feet of CVP water annually. BVWD contains many small rural residences, ranging from 1 to 40 acres, that receive both agricultural and M&I CVP water used for irrigation, domestic purposes, and pasture. BVWD has five wells that supply approximately 798 acre-feet of water for M&I purposes and 506 acre-feet of water for irrigation annually. There are no plans for any major residential development. The irrigated land in BVWD's contract service area is used primarily to grow forage crops, with the remainder used to grow cereal grains, deciduous orchards, and other field crops.

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- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

Bella Vista Water District  
Figure 3-5



### 3.4.4.3 Geology and Soils

The majority of BVWD's service area is alluvial valley deposits; however, BVWD extends into areas composed of foothill materials and soils. Valley soil types consist of well-drained clay loams, and the foothill soil types consist of well-drained to excessively-drained sandy loams.

### 3.4.4.4 Water Resources and Water Use

BVWD has a contract for up to 24,000 acre-feet of CVP water for irrigation and/or M&I uses. CVP water is delivered to BVWD at the Wintu Pumping Plant located on the Sacramento River, near the City of Redding. CVP water and groundwater are BVWD's sources of water supply.

Prior to the introduction of CVP water supplies, 334 acres of land received other sources of water. BVWD has historically used up to 23,993 acre-feet of water per year.

CVP water is delivered mainly to support rural residential land uses, including the irrigation of lands associated with local development. The volume of CVP water currently delivered outside the authorized POU is approximately 447 acre-feet.

Prior to receiving CVP water, the lands were supplied from marginal groundwater extractions.

### 3.4.4.5 Groundwater Resources

BVWD lands outside the authorized POU have access to an unspecified amount of water from private groundwater wells as an alternative to receiving CVP water. However, this water is of limited quantity and is not expected to be sufficient to meet existing water supply requirements. The groundwater appears to be of adequate quality for agricultural, industrial, and municipal uses.

### 3.4.4.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by four vegetative community/habitat types. Table 3-14 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 13 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, two species (the valley elderberry longhorn beetle and the California red-legged frog) are designated as threatened in accordance with the federal Endangered Species Act.

**Table 3-14  
Native Vegetation Types on Lands Outside the POU\***

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	88	22	110
Valley-foothill riparian/fresh emergent wetland	0	0	0	26	6	32
Mixed chaparral	0	0	0	496	106	602
Annual grassland	0	0	0	411	126	537
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,021</b>	<b>260</b>	<b>1,281</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Based on a review of the CNDDDB, the silky cryptantha (a special-status species) has been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.4.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites containing historic-era sites or features.

### 3.4.5 City of Coalinga

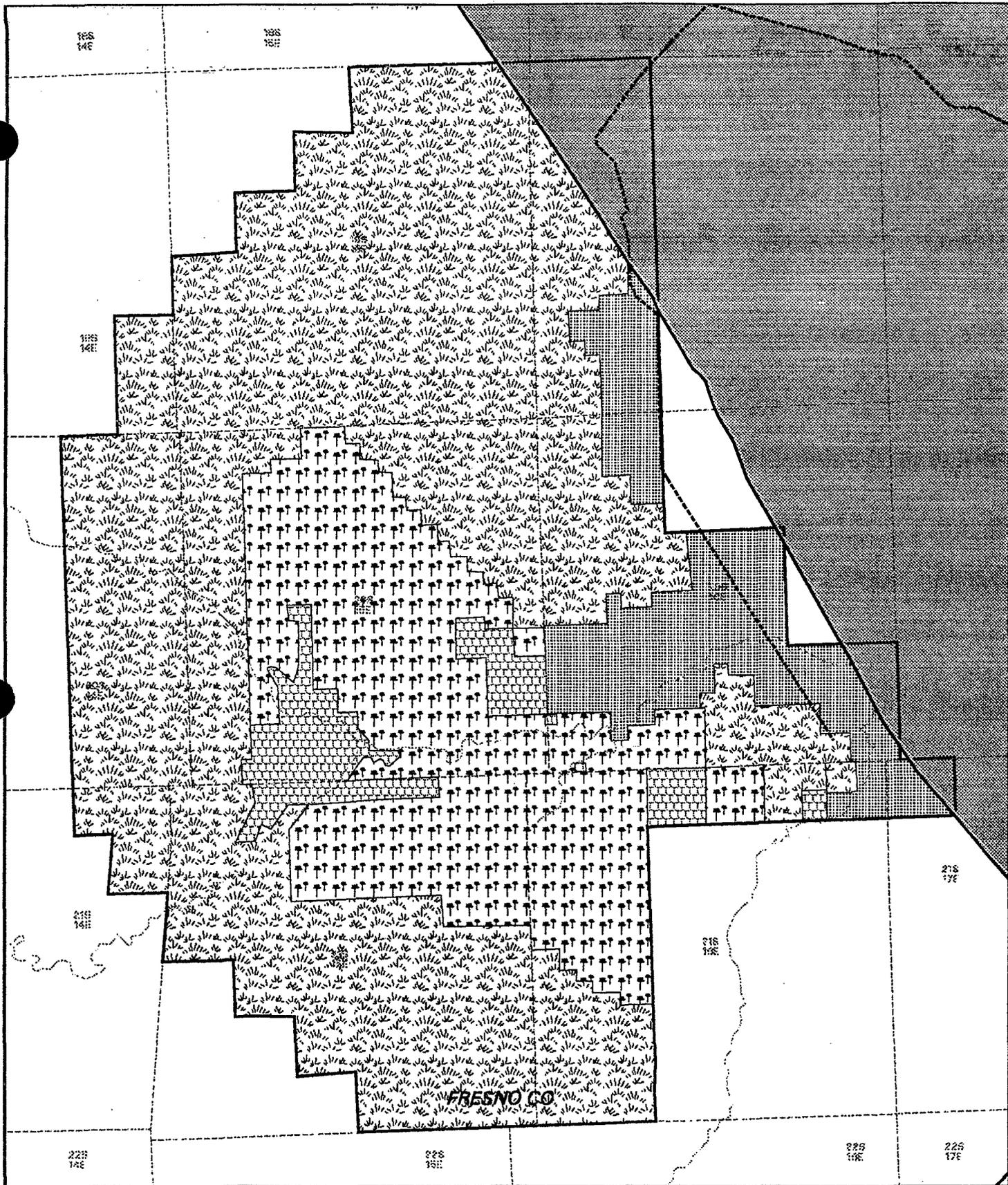
The City of Coalinga (Coalinga) entered into a long-term water service contract (No. 14-06-200-4173A) with Reclamation for CVP water delivery on October 28, 1968. Coalinga began delivery of the M&I water in October 1970.

#### 3.4.5.1 General Description and Location

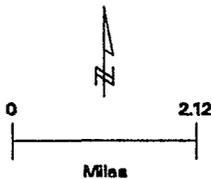
Coalinga is located near the southern boundary of the San Joaquin Valley. The town was developed and thrived for many years on groundwater and non-CVP water that was delivered from Armona. The Coalinga service area covers 106,618 acres. Of this total, about 99,167 acres are located outside the authorized POU. These lands are shown in Figure 3-6.

#### 3.4.5.2 Land Use and Land Use Policies

The Coalinga service area is located within incorporated lands of the City of Coalinga, as well as within the unincorporated lands of Fresno County. The General Plans for the City and County designate these lands for primarily agricultural rangeland and M&I uses. The General



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Place Of Use Boundary |
|  | Irrigated CVP                   |  | Contract Service Area |
|  | Non-CVP Water Service           |  | Canals                |
|  | Municipal & Industrial CVP      |  | County Boundary       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | See Westlands map               |  |                       |



City of Coalinga  
Figure 3-6



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Plans also allow public facilities, mineral resources, open space, and parks and recreation uses within the CVP contract service area.

Of the 92,007 acres located outside the authorized POU, 4,674 acres are encroachment lands and 87,333 acres are expansion lands. 4,674 acres are in an M&I use, and 63,932 acres are undeveloped and support native vegetation. About 23,401 acres are in irrigated agriculture that use non-CVP water sources from Pleasant Valley Water District. About 7,160 acres are in both the City of Coalinga and Westlands Water District service areas. The land uses of the 7,160 acres are irrigated agriculture and undeveloped, supporting native vegetation. These overlapping lands are included in the discussion of Westlands Water District acreages presented in Section 3.4.25 of this EIR.

The irrigated and dryland agricultural operations, cattle feedlots, and ancillary industrial agricultural operations (e.g., processing and warehousing) occupy nearly 33,400 acres (31.3 percent) of the land in the Coalinga service area. Most of this land was developed and is being farmed with non-CVP water except for small areas along the eastern boundary of the service area. The CVP-serviced irrigated agricultural land receives water through contracts with Westlands Water District and is addressed in Section 3.4.25 of the EIR.

Rangeland activities include grazing and idle farmlands; those lands are identified as native vegetation in this EIR. In some locations, these areas are intermixed with oil and gas activities.

Three aggregate mining companies operate in the Coalinga service area. The operators extract rock, sand, and gravel through surface mining. Oil industry land use activities include exploration, development, production, and abandonment of wells and facilities. There are approximately 2,700 active oil wells in the Coalinga service area.

### **3.4.5.3 Geology and Soils**

Coalinga is located in the southern San Joaquin Valley. The San Joaquin Valley is a structural trough bounded by the Coast Range on the west, which is composed primarily of ultramafic rock overlain by Cretaceous to Tertiary marine rock, Tertiary volcanics, and a mix of Tertiary to Quaternary age continental deposits (Lettis, 1982). The valley deposits consist of several thousand feet of Cenozoic sedimentary rocks and unconsolidated alluvium which reflect their geologic sources in the surrounding highlands, and their fluvial and alluvial depositional environments.

### **3.4.5.4 Water Resources and Water Use**

Coalinga has a contract for the delivery of 10,000 acre-feet of CVP water for M&I use consistent with the CVP contract terms. Coalinga receives up to 7,000 acre-feet in restricted years. Coalinga has historically used up to 6,738 acre-feet of water per year.

From 15 to 20 percent of Coalinga's CVP water supply is used by the oil and gas industry for processing. The state prison receives 1,100 acre-feet per year. The Harris Feed Lot and Polvadero Golf Course use 1,050 acre-feet of untreated CVP water. The remaining water is used by the City for municipal service and domestic deliveries to area farms.

### 3.4.5.5 Groundwater Resources

Lands within the Coalinga service area outside the authorized POU have access to an unspecified amount of groundwater. However, because of current rates of groundwater overdraft in this area, this source is not expected to be available as a long-term supply. Groundwater resources in the area are brackish and therefore are not considered as an alternative water supply for M&I use.

### 3.4.5.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-15 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill riparian/fresh emergent wetland	0	0	0	15	903	918
Annual grassland/alkali scrub	0	0	0	4,659	86,430	91,089
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4,674</b>	<b>87,333<sup>b</sup></b>	<b>92,007</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).  
<sup>b</sup>This total does not include the 7,160 acres of habitat that overlap with Westlands Water District. The habitats of the 7,160 acres are included in Table 3-43.

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 32 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-16 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, the blunt-nosed leopard lizard, San Joaquin antelope squirrel, San Joaquin pocket mouse, burrowing owl, and San Joaquin woolly-threads have been observed on lands within the CVP contract service area outside the authorized POU.

Table 3-16 Threatened and Endangered Species within City of Coalinga		
Habitat	Species	Status
Alkali scrub Annual grassland	California jewelflower	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin woolly-threads	State: -- Federal: Endangered
Alkali scrub	Blunt-nosed leopard lizard	State: Endangered Federal: Endangered
Annual grassland Fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Alkali scrub	Fresno kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered

Species listed are in accordance with the state and federal Endangered Species Acts.

A Habitat Conservation Plan (HCP), prepared in 1994 by Pleasant Valley Water District, covers 155,189 acres and encompasses the Coalinga contract service area. The HCP contains programs and policies to protect and enhance sensitive species in the area. When the new Coalinga Airport was designed, a habitat management area of 360 acres was dedicated for a San Joaquin kit fox management area. The airport lands previously were cultivated and used for agricultural production.

### 3.4.5.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, 10 sites have been recorded. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering numerous small prehistoric sites containing historic-era sites or features.

### 3.4.6 Colusa County Water District

Colusa County Water District (CCWD) entered into a long-term water service contract (No. 14-06-200-304-A) with Reclamation for CVP water delivery on May 21, 1963, and it was amended on June 18, 1964. CCWD also entered into a subcontract with the County of Colusa (No. 1-07-20-W0220) on December 9, 1980, amended on April 8, 1986, and on August 31, 1987.

CCWD's original water service contract expired on February 28, 1995. That contract was renewed for an interim period of 3 years effective March 1, 1995 (No. 14-06-200-304-A-IR1). The District's subcontract with the County of Colusa also was renewed for a 3-year interim period on December 12, 1994 (No. 1-07-20-W0220-IR1).

#### 3.4.6.1 General Description and Location

CCWD is located in the central portion of the Sacramento Valley. The CCWD service area covers 45,954 acres. Of this total, about 2,147 acres are located outside the authorized POU. These lands are shown in Figure 3-7.

#### 3.4.6.2 Land Use and Land Use Policies

The CCWD service area is located within the unincorporated lands of Colusa and Yolo counties. The Colusa County General Plan designates these lands for primarily agricultural and rural residential uses. The Yolo County General Plan designates these lands for primarily rangeland.

Of the 2,147 acres located outside the authorized POU, 1,499 acres are encroachment lands and 648 acres are expansion lands. 1,499 acres are in an irrigated agricultural land use, and the remaining 648 acres are undeveloped and support native vegetation. The irrigated land in the CCWD contract service area consists primarily of almonds, with the remainder used for growing wheat and other field crops.

#### 3.4.6.3 Geology and Soils

The majority of CCWD's service area is ancient marine and alluvial deposits. Portions of CCWD extend into foothill areas of undifferentiated loams and adobes. The valley floor soils are primarily alluvial silt loams, clays, and sands. Sedimentary deposits on the valley floor form some of the prime agricultural soils. These sediments can have drainage problems, however, that limit the types of agricultural crops produced in this area (Sedway Cooke Associates, 1989).

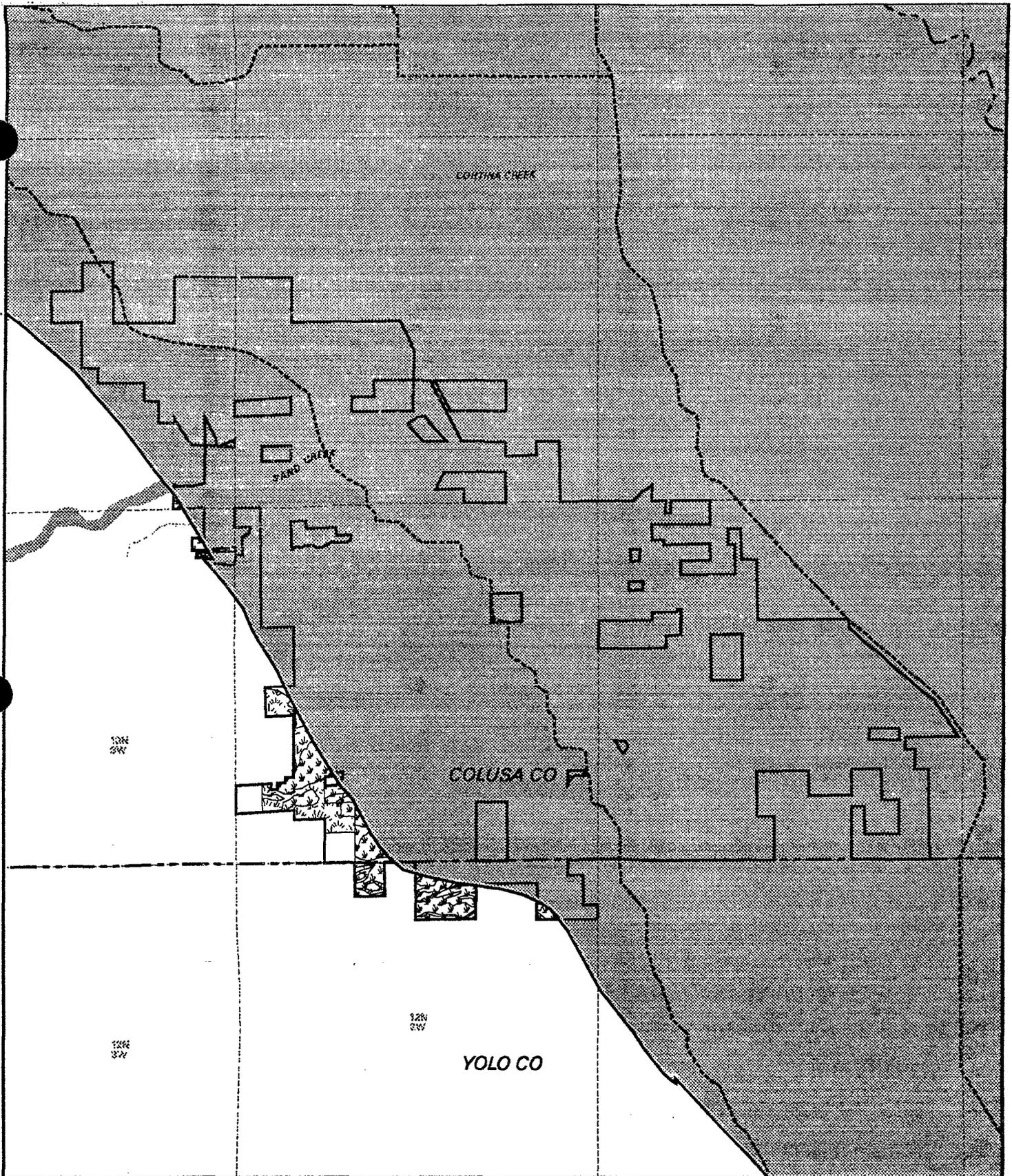
#### 3.4.6.4 Water Resources and Water Use

CCWD has a contract for the delivery of 62,200 acre-feet of water. CVP water use is restricted to agricultural purposes consistent with the CVP contract terms. CCWD has historically used up to 61,582 acre-feet of water per year.

The lands that are identified in the encroachment and expansion areas historically have been cultivated (either as dryland agriculture or irrigated with a source other than CVP water) or are classified as Class 6, non-irrigable lands. CVP water is CCWD's only source of surface water supply.

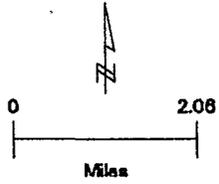
#### 3.4.6.5 Groundwater Resources

CCWD uses CVP water exclusively on lands outside the authorized POU and does not have alternative groundwater supplies capable of meeting the needs of uses in this area.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Colusa County Water District  
Figure 3-7



### 3.4.6.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by four vegetative community/habitat types. Table 3-17 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	13	0	0	67	80
Valley-foothill riparian/fresh emergent wetland	0	6	0	0	7	13
Mixed chaparral	0	31	0	0	3	34
Annual grassland/alkali scrub	0	1,449	0	0	571	2,020
<b>TOTAL</b>	<b>0</b>	<b>1,499</b>	<b>0</b>	<b>0</b>	<b>648</b>	<b>2,147</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 10 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, three species (the peregrine falcon, valley elderberry longhorn beetle, and striped adobe lily), are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the POU.

### 3.4.6.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a moderate to high archaeological sensitivity with a moderate probability of encountering prehistoric habitation sites.

### **3.4.7 Contra Costa Water District**

Contra Costa Water District (Contra Costa) entered into a water service and repayment contract (No. I75r-3401) with Reclamation for CVP water delivery on September 18, 1951 for delivery on March 1, 1953. The most recent amended contract was signed May 26, 1994, and expires December 31, 2010.

#### **3.4.7.1 General Description and Location**

Contra Costa is located east of the San Francisco Bay and south of the Sacramento River. The Contra Costa service area covers 115,220 acres. Of this total, about 1,031 acres are located outside the authorized POU. These lands are shown in Figure 3-8.

#### **3.4.7.2 Land Use and Land Use Policies**

The Contra Costa service area is located within the incorporated and unincorporated lands of Contra Costa County and a small portion of Alameda County. The Contra Costa County General Plan designates these lands for primarily urban, rural residential, commercial, industrial, open space, agricultural, watershed, and recreational uses. The Alameda County General Plan designates land outside the authorized POU for water management, resource management, and agricultural use. Land uses on lands outside the authorized POU in Alameda County include cattle grazing, rural residential uses, and agricultural uses (Contra Costa Water District et al., 1992).

The 1,031 acres located outside the authorized POU are expansion lands, classified as native vegetation. Some land is wetlands and is under water. Most of the area outside the authorized POU is protected from further development under terms associated with mitigation identified for the Los Vaqueros Project (Contra Costa Water District et al., 1992).

#### **3.4.7.3 Geology and Soils**

Contra Costa lands outside the authorized POU primarily consist of mountainous uplands composed of weathered sandstone and shale. A minor portion of the lands outside the authorized POU consists of alluvial deposits composed of floodplains and delta soils.

#### **3.4.7.4 Water Resources and Water Use**

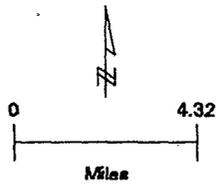
Contra Costa has a contract for the delivery of 195,000 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. No CVP water is delivered to lands outside the authorized POU.

#### **3.4.7.5 Groundwater Resources**

The lands outside the authorized POU are located in the Kellogg Creek watershed. Kellogg Creek is a source of groundwater recharge in the watershed. Wells in the vicinity of the creek are used for primarily domestic purposes. Nearly all irrigation uses are supplied by imported surface water (Contra Costa Water District et al., 1992).



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |



Contra Costa Water District  
Figure 3-8



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### 3.4.7.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-18 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	0	0	0	0	678	678
Saline emergent wetland	0	0	0	0	347	347
Valley-foothill riparian/ fresh emergent wetland	0	0	0	0	6	6
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,031</b>	<b>1,031</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these communities and habitat types. Table D-2 lists the 21 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-19 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Habitat	Species	Status
Valley-foothill riparian/fresh emergent wetland	California red-legged frog	State: Species of Special Concern Federal: Threatened
Fresh emergent wetland Saline emergent wetland	California black rail	State: Threatened Federal: Species of Concern
Fresh emergent wetland Saline emergent wetland	California clapper rail	State: Endangered Federal: Endangered
Valley-foothill riparian/fresh emergent wetland Annual grassland	Peregrine falcon	State: Endangered Federal: Endangered
Saline emergent wetland	Saltmarsh harvest mouse	State: Endangered Federal: Endangered
Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Annual grassland	Antioch Dunes evening primrose	State: Endangered Federal: Endangered

Species listed are in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, the California tiger salamander has been observed on lands within the CVP contract service area outside the authorized POU.

### **3.4.7.7 Cultural Resources**

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, three sites have been recorded on lands outside the authorized POU. These lands were determined to have a low archaeological sensitivity with a high probability of encountering prehistoric sites during M&I development.

### **3.4.8 Corning Water District**

Corning Water District (CWD) entered into a long-term water service contract (No. 14-06-200-6575) with Reclamation for CVP water delivery on August 1, 1957, and it was amended on March 9, 1962, and August 4, 1971. That contract expired on February 28, 1995. The contract was renewed for an interim period of 3 years effective March 1, 1995 (No. 14-06-200-6575-IR1).

#### **3.4.8.1 General Description and Location**

CWD is located in the north-central portion of the Sacramento Valley. The CWD service area covers 13,049 acres. Of this total, about 2,034 acres are located outside the authorized POU. These lands are shown in Figure 3-9.

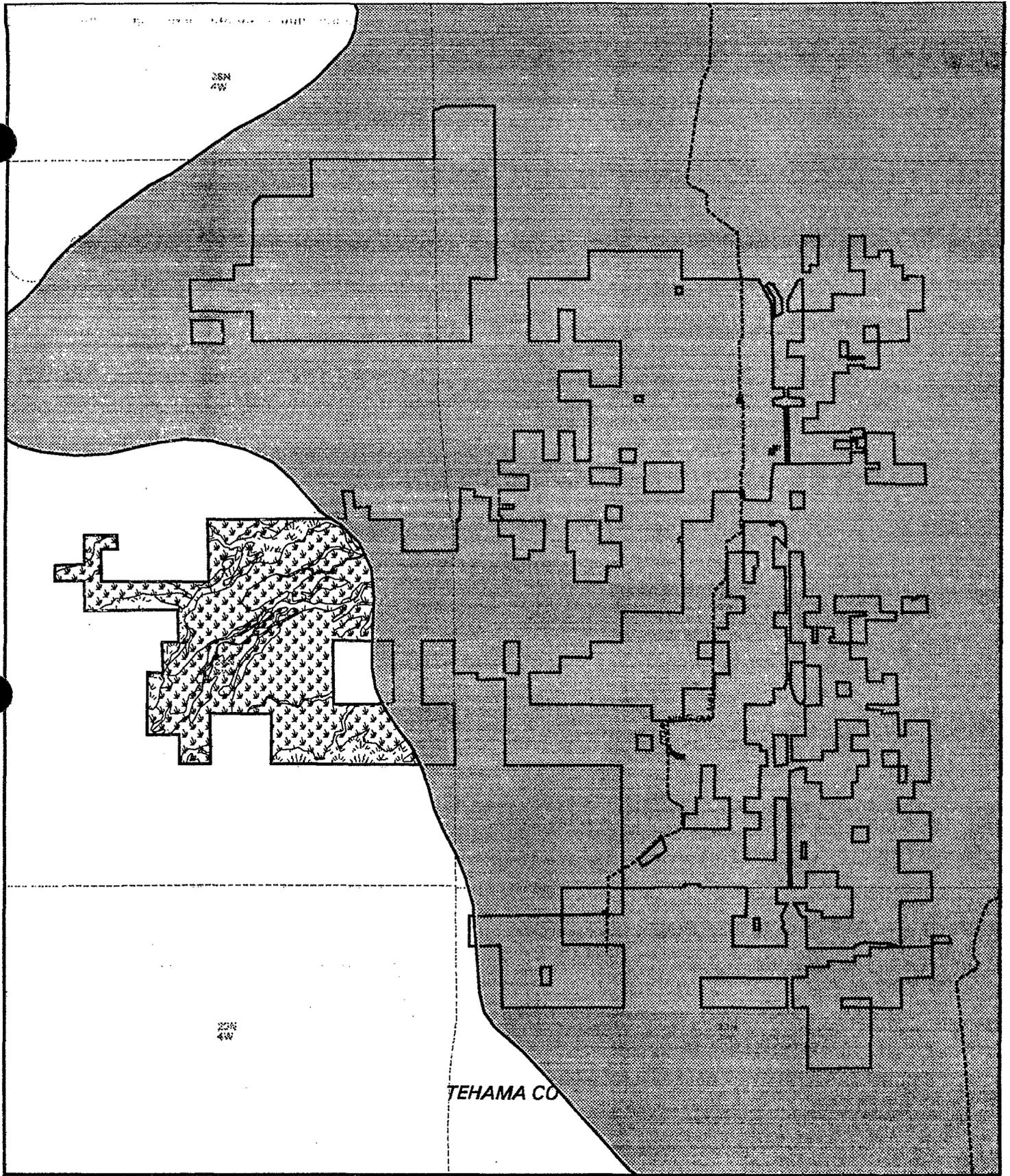
#### **3.4.8.2 Land Use and Land Use Policies**

The CWD service area is located within the incorporated lands of the City of Corning and within the unincorporated lands of Tehama County. The County and City General Plans designate these lands for primarily agricultural uses.

Portions of the land originally received CVP water in 1973, and other areas originally received CVP water in 1974. Other parcels received water in the late 1980s and early 1990s. All CVP water is used for irrigation purposes.

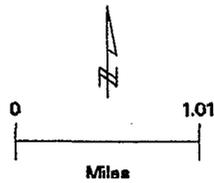
Of the 2,034 located outside the authorized POU, 1,647 acres are encroachment lands and 387 acres are expansion lands.

CWD records and recollection of local property owners indicate that the 2,034 acres identified in the encroachment and expansion areas have historically been dryland agriculture or are classified as Class 6, non-irrigable lands. About 1,647 acres currently receive CVP water, and 387 acres are classified as native vegetation.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Corning Water District  
Figure 3-9



The primary irrigated land in the CWD contract service area supports rice, almonds, prunes and olives, with the remainder used to grow irrigated pasture and other field crops.

### 3.4.8.3 Geology and Soils

The CWD area is primarily a mixture of ancient marine and alluvial deposits. CWD extends into foothill soils that include undifferentiated loams and clays. Along the valley floor soils are alluvial silt loams, clays, and sands. The sedimentary deposits help form some of the prime agricultural soils. Some of these sediments, however, can be poorly drained and pose limitations for agricultural crops.

### 3.4.8.4 Water Resources and Water Use

CWD has a contract for the delivery of 25,300 acre-feet of water. CVP water use is restricted to agricultural purposes consistent with the CVP contract terms. Prior to the introduction of CVP water supplies, the 1,647 acres of encroached agricultural lands did not receive water from other sources. CWD has historically used up to 27,355 acre-feet of water per year.

CVP water is delivered via the Corning Canal. CVP water is CWD's only source of surface water supply.

### 3.4.8.5 Groundwater Resources

CWD uses CVP water exclusively on lands outside the authorized POU and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

### 3.4.8.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-20 identifies this type and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	0	1,612	0	0	367	1,979
Valley-foothill riparian/fresh emergent wetland	0	35	0	0	20	55
<b>TOTAL</b>	<b>0</b>	<b>1,647</b>	<b>0</b>	<b>0</b>	<b>387</b>	<b>2,034</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in this community and habitat type. Table D-2 lists the 12 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, two species (the Swainson's hawk and peregrine falcon) are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, the Swainson's hawk and burrowing owl have been observed on lands within the CVP contract service area outside the authorized POU.

#### **3.4.8.7 Cultural Resources**

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the authorized POU. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering prehistoric sites.

#### **3.4.9 Del Puerto Water District**

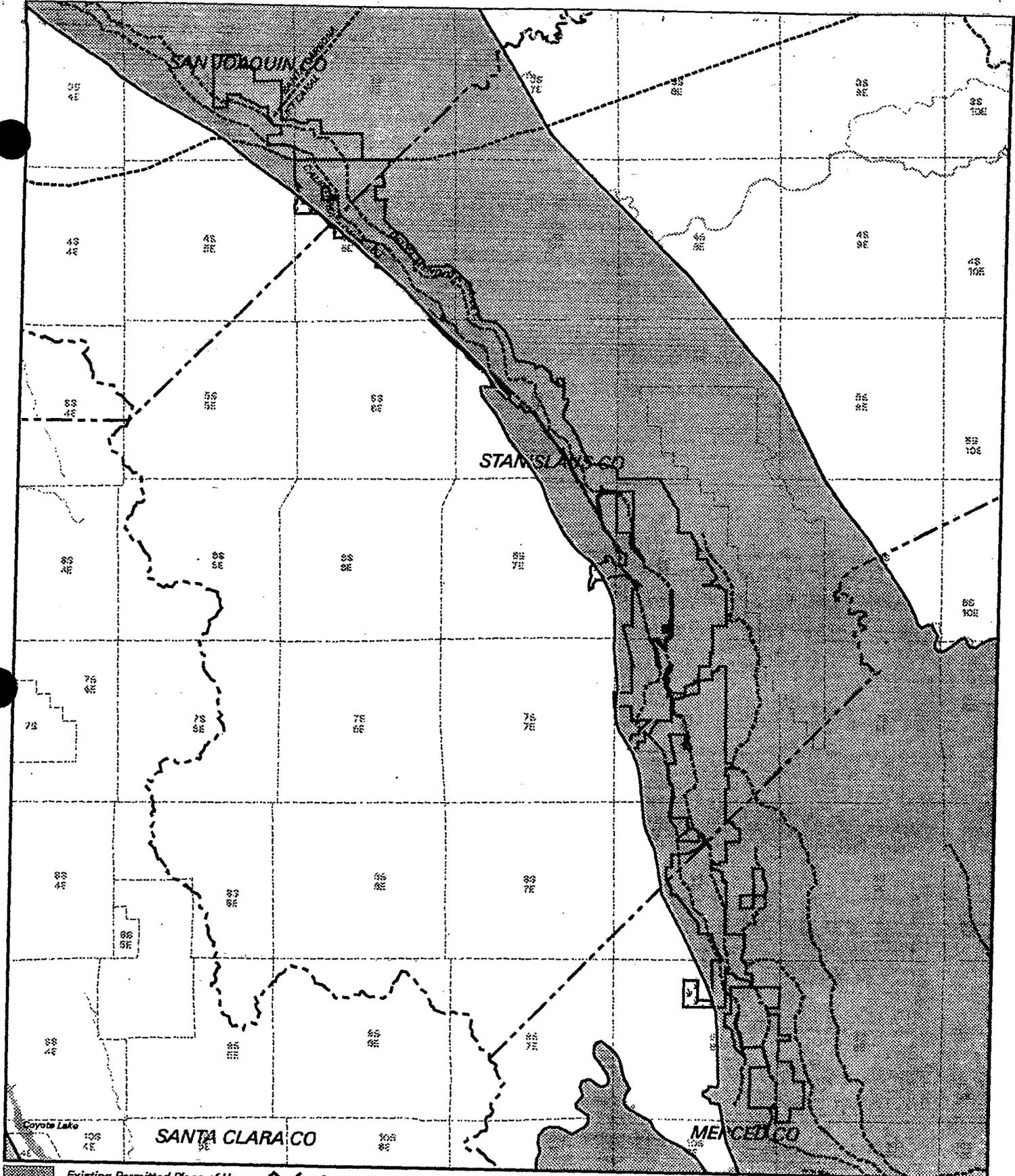
Del Puerto Water District (DPWD) entered into a long-term water service contract (No. 14-06-200-922) with Reclamation for CVP water delivery on June 10, 1953. On February 13, 1995, DPWD was assigned the water service contracts of the Hospital Water District (No. 14-04-200-923-IR1), Kern Cañon Water District (No. 14-06-200-924-IR1), Salado Water District (No. 14-06-200-925-IR1), Davis Water District (No. 14-06-200-1458-IR1), Sunflower Water District (No. 14-06-200-1804-IR1), Foothill Water District (No. 14-06-200-4323), Romero Water District (No. 14-06-200-7758), Orestimba Water District (No. 14-06-200-8091), Mustang Water District (No. 14-06-200-8103), and Quinto Water District (No. 14-06-200-8899). DPWD had two interim renewal contracts, No. 14-06-200-922-IR2 (entered into on February 27, 1995, for a 2-year period) and No. 14-06-200-4323-IR1 (entered into on February 29, 1996, for a 1-year period). DPWD now has one interim renewal contract (No. 14-06-200-922-IR3), which was entered into on February 27, 1997, for a 1-year period.

##### **3.4.9.1 General Description and Location**

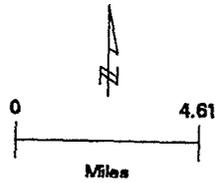
DPWD is located in the northwestern portion of the San Joaquin Valley. The DPWD service area covers 34,479 acres. Of this total, about 1,000 acres are located outside the authorized POU. These lands are shown in Figure 3-10.

##### **3.4.9.2 Land Use and Land Use Policies**

The DPWD service area is located within the unincorporated lands of San Joaquin, Stanislaus, and Merced counties. The San Joaquin General Plan designates these lands for primarily general agricultural and public land uses. The Stanislaus County General Plan designates them for general agricultural, urban, rural residential, and commercial uses. The Merced County General Plan designates these lands primarily for general agricultural uses.



- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Cenals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |



Del Puerto Water District  
Figure 3-10



Of the 1,000 acres of land located outside the authorized POU, 808 acres are encroachment lands and 192 acres are expansion lands. DPWD records indicate that 261 acres have been cultivated and irrigated since 1956, 547 acres have been cultivated and irrigated since 1966, and the remaining 192 acres have been cultivated and irrigated during several years since 1974. Prior to these dates, all of these lands were cultivated in dryland agriculture. About 808 of the 1,000 acres are currently in irrigated agricultural land use and receive CVP water. The northernmost 192 acres in DPWD receive irrigation from non-CVP sources. The primary irrigated land in DPWD is cultivated in fruits, nuts, and vegetables, with the remainder used to grow cereals, forage, and other field crops.

### 3.4.9.3 Geology and Soils

DPWD is located in the northern San Joaquin Valley, southwest of Modesto. The San Joaquin Valley is a structural trough bounded by the Coast Range on the west. The valley deposits consist of several thousand feet of Cenozoic sedimentary rocks and unconsolidated alluvium that reflect their geologic sources in the surrounding highlands and their fluvial and alluvial depositional environments.

Eocene marine rocks exposed in the Coast Range are the primary source of elevated selenium concentrations in soil, sediment, and groundwater in the San Joaquin Valley. Particulates and dissolved ions are transported to the valley floor by weathering and erosion of the mineral-rich source rocks. Soils in parts of the San Joaquin Valley with selenium concentrations above the median concentration for United States soils of 0.3 mg/kg (Shacklette et al., 1974) are adjacent to the Coast Range where marine rocks are exposed (Gilliom et al., 1989). Soils in DPWD are generally located on upland terrace landforms and contain selenium concentrations between 0.13 and 0.36 mg/kg (Tidball et al., 1986).

### 3.4.9.4 Water Resources and Water Use

DPWD has a contract for up to 140,210 acre-feet of water for irrigation and M&I purposes. Prior to the introduction of CVP water supplies, all agricultural lands were dryland agriculture. Including water used under contracts assigned to it, DPWD has historically used up to 140,210 acre-feet of water per year.

### 3.4.9.5 Groundwater Resources

DPWD lands outside the authorized POU have access to an unspecified amount of groundwater resources from private wells. Intense pumping, causing groundwater overdrafts to occur in areas of the San Joaquin Valley, may potentially affect DPWD.

Groundwater in DPWD exhibits moderately high selenium concentrations. Elevated selenium concentrations are found in soils throughout DPWD (Tidball et al., 1986). The most soluble forms of selenium can be leached by precipitation and irrigation into the groundwater, and further concentrated by evapotranspiration. Subsurface drainage has been installed in many agricultural areas to flush selenium and other trace elements below the root zone. The use of local groundwater resources containing elevated selenium concentrations may pose a potentially significant threat to wildlife and other biological resources.

### 3.4.9.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-21 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill riparian/fresh emergent wetland	0	1	0	0	0	1
Annual grassland	0	807	0	0	192	999
<b>TOTAL</b>	<b>0</b>	<b>808</b>	<b>0</b>	<b>0</b>	<b>192</b>	<b>1,000</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in these community and habitat types. Table D-2 lists the 23 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-22 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Habitat	Species	Status
Annual grassland Fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Valley-foothill riparian/fresh emergent wetland	Peregrine falcon	State: Endangered Federal: Endangered
Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Valley-foothill riparian/fresh emergent wetland	Valley elderberry longhorn beetle	State: -- Federal: Threatened
Annual grassland	Swainson's hawk	State: Threatened Federal: --
Annual grassland	San Joaquin antelope squirrel	State: Threatened Federal: Species of Concern

Species listed are in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, the San Joaquin kit fox and the Great Valley cottonwood riparian forest have been observed on lands within the DPWD contract service area outside the authorized POU.

#### **3.4.9.7 Cultural Resources**

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a low archaeological sensitivity with a low probability of encountering prehistoric sites.

### **3.4.10 East Bay Municipal Utility District**

East Bay Municipal Utility District (EBMUD) entered into a long-term water service contract (No. 14-06-200-5183A) with Reclamation on December 22, 1970. The contract provided for delivery of up to 150,000 acre-feet of CVP water each year from the Folsom South Canal. However, subsequent court decisions did not allow EBMUD to take water at the Folsom South Canal, and no alternative CVP water delivery system was ever established except as noted below in water year 1978.

#### **3.4.10.1 General Description and Location**

EBMUD is located east of San Francisco Bay. The EBMUD service area covers 259,324 acres. Of this total, about 1,494 acres are located outside the authorized POU. These lands are shown in Figure 3-11.

#### **3.4.10.2 Land Use and Land Use Policies**

The EBMUD service area is located within the incorporated and unincorporated lands of Alameda and Contra Costa counties. The two County General Plans designate these lands for a wide variety of uses, including single-family residential, parks and recreation, open space, and agricultural uses.

Of the 1,494 acres located outside the authorized POU, all lands are expansion lands, classified as M&I land use.

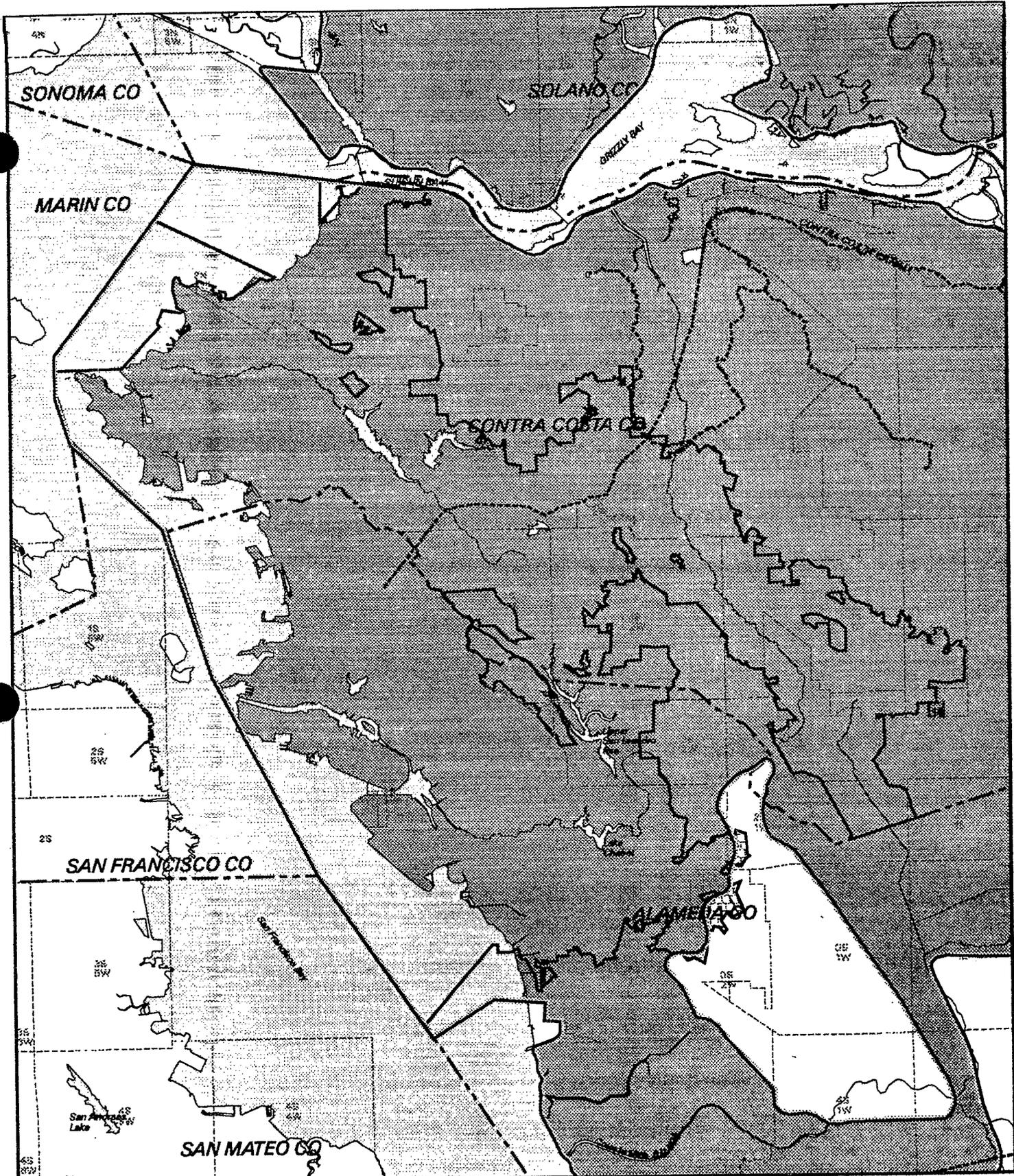
#### **3.4.10.3 Geology and Soils**

EBMUD lands outside the authorized POU are composed of mountainous uplands, consisting of weathered interbedded sedimentary rocks.

#### **3.4.10.4 Water Resources and Water Use**

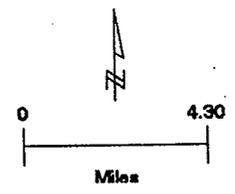
CVP water was delivered to EBMUD only twice during one season in water year 1978. The water was released to the American River at Nimbus Dam and taken by EBMUD from the Sacramento-San Joaquin Delta. The CVP water was commingled with other water supplies and delivered to the entire service area.

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|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

East Bay Municipal Utility District  
Figure 3-11



CVP water use is restricted to M&I purposes consistent with the CVP contract terms. The 1,494 acres of M&I lands are supplied by non-CVP sources of water.

### 3.4.10.5 Groundwater Resources

Although groundwater resources are available in EBMUD, they are not abundant enough to satisfy water demand in the service area. If EBMUD were to rely on pumping of groundwater from local aquifers, saltwater intrusion from San Francisco Bay could result, and water quality may be substantially degraded. For lands located outside the authorized POU, local aquifers are not believed to provide sufficient supplies to meet existing and future M&I water demands.

### 3.4.10.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by five vegetative community/habitat types. Table 3-23 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	0	397	397
Valley-foothill riparian/fresh emergent wetland	0	0	0	0	36	36
Annual grassland	0	0	0	0	640	640
Mixed chaparral	0	0	0	0	260	260
Saline emergent wetland	0	0	0	0	161	161
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,494</b>	<b>1,494</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 26 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-24 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Table 3-24 Threatened and Endangered Species Within East Bay Municipal Utility District		
Habitat	Species	Status
Valley-foothill riparian/fresh emergent wetland	California red-legged frog	State: Species of Concern Federal: Threatened
Fresh emergent wetland Saline emergent wetland	California clapper rail	State: Endangered Federal: Endangered
Saline emergent wetland	Western snowy plover	State: Species of Special Concern Federal: Threatened
Saline emergent wetland	California least tern	State: Endangered Federal: Endangered
Fresh emergent wetland Saline emergent wetland	California black rail	State: Threatened Federal: Species of Concern
Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Valley-foothill hardwood-conifer Valley-foothill riparian/fresh emergent wetland Mixed chaparral	Alameda whipsnake	State: Threatened Federal: Proposed Endangered
Species listed are in accordance with state and federal Endangered Species Acts.		

Based on a review of the CNDDDB, the golden eagle, sharp-shinned hawk, and California red-legged frog have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.10.7 Cultural Resources

Lands within the boundaries of the EBMUD service area are expected to range from a low to high archaeological sensitivity, depending on a particular area's ability to support historic populations. Because the lands within the service area range from a low to high archaeological sensitivity, the lands would have a correspondingly low to high probability of encountering cultural resource sites.

A general cultural resources assessment was not performed for EBMUD for two reasons. First, past development of lands within the EBMUD service area was facilitated solely by non-CVP water sources; therefore, cultural resources that were present within the service area would have already been affected by non-CVP water sources. Secondly, if a water distribution system is established to deliver CVP water to the EBMUD service area in the future and CVP water delivery to EBMUD commences, the CVP water would not be delivered to currently undeveloped areas. Therefore, the potential to affect cultural resources, if any are present in the service area, is minimized. These two reasons, in combination, make it unnecessary to conduct an assessment to identify specific cultural resource sites throughout the EBMUD service area.

### **3.4.11 El Dorado Irrigation District**

The County of El Dorado entered into a long-term water service contract (No. 14-06-200-7312) with Reclamation for CVP water delivery on July 25, 1958. El Dorado Hills County Water District entered into a long-term water service contract (No. 14-06-200-1357A) with Reclamation for CVP water delivery on October 5, 1964. The contracts provided for water to be delivered from Folsom Lake to both districts. Both contracts were assigned to El Dorado Irrigation District (EID) in December 1973, and Reclamation approved the assignments in February 1974.

#### **3.4.11.1 General Description and Location**

EID is located east of the City of Sacramento and southeast of Folsom Lake. The EID service area covers 23,578 acres. The entire service area is located outside the authorized POU. These lands are shown in Figure 3-12.

#### **3.4.11.2 Land Use and Land Use Policies**

The EID service area is located within the incorporated and unincorporated lands of El Dorado and Sacramento counties. The El Dorado County General Plan designates these lands for primarily M&I, public facilities, parks and recreation, and open space uses. The Sacramento County General Plan designates these lands for general agricultural uses.

Of the 23,578 acres located outside the authorized POU, 18,945 acres are encroachment lands and 5,083 acres are expansion lands. 18,495 acres correspond to a M&I land use, and the remaining 5,083 acres are undeveloped and support native vegetation.

#### **3.4.11.3 Geology and Soils**

EID service area lands outside the authorized POU consist of mountainous uplands interspersed with alluvial valley bottoms. Soils in this area range from silty loams in the valley bottoms to extremely stony sandy loams on steeper slopes. Numerous outcrops of serpentine rock are located throughout this area on steeper hillsides.

On steeper slopes and hillsides in portions of the EID service area, gabbroic soils, formed from basalt, are mixed with serpentine rock. This geologic formation and associated soils provide a unique combination of conditions suitable for the establishment of several plant species that are limited in range and distribution. These species are discussed further in Section 3.4.11.6.

#### **3.4.11.4 Water Resources and Water Use**

The maximum quantity of water annually available under the two contracts is 7,550 acre-feet. The contracts are limited to M&I purposes. Prior to the introduction of CVP water supplies, the 18,495 acres of M&I lands were supplied by other sources of water (Sly Park). EID has historically used up to 5,000 acre-feet of water per year. Water deliveries in 1994 and 1995 totaled 3,965 and 4,316 acre-feet, respectively, from Folsom Lake.

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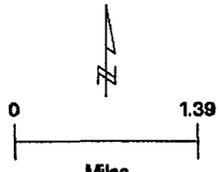
PLACER CO

EL DORADO CO

SACRAMENTO CO

-  Existing Permitted Place of Use
-  Irrigated CVP
-  Non-CVP Water Service
-  Municipal & Industrial CVP
-  Dryland Agriculture
-  Native Vegetation
-  Place Of Use Boundary
-  Contract Service Area
-  Canals
-  County Boundary

El Dorado Irrigation District  
Figure 3-12



Water furnished under the contracts is taken from Folsom Lake through a pumping plant located on the eastern side of the lake. The water serves Lake Hills Estates, which borders Folsom Lake at the lower end of the South Fork American River arm, and the residential development of El Dorado Hills.

### 3.4.11.5 Groundwater Resources

Although groundwater sources are available in the EID service area, they are not abundant enough to satisfy water demand of existing and future uses occurring in the district. The water appears to be of adequate quality for M&I uses.

### 3.4.11.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-25 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 30 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood	0	0	0	7,879	1,849	9,728
Annual grassland	0	0	0	10,616	3,234	13,850
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18,495</b>	<b>5,083</b>	<b>23,578</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Of the species listed in Table D-2, the species in Table 3-26 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Table 3-26 Threatened and Endangered Species Within El Dorado Irrigation District		
Habitat	Species	Status
Open water	California red-legged frog	State: Species of Concern Federal: Threatened
Valley-foothill hardwood	Bald eagle	State: Endangered Federal: Threatened
Valley-foothill hardwood	Peregrine falcon	State: Endangered Federal: Endangered
Annual grassland	Swainson's hawk	State: Threatened Federal: --
Annual grassland	Layne's butterweed	State: Rare Federal: Threatened
Valley-foothill hardwood	Pine Hill ceanothus	State: Rare Federal: Endangered
Annual grassland	Pine Hill flannelbush	State: Rare Federal: Endangered
Annual grassland	El Dorado bedstraw	State: Rare Federal: Endangered
Annual grassland	Stebbin's morning glory	State: Endangered Federal: Endangered
Valley-foothill hardwood	Redhill's soaproot	State: -- Federal: Species of Concern
Valley-foothill hardwood	Bisbee Peak rush rose	State: -- Federal: Species of Concern
Valley-foothill hardwood	El Dorado County mule ears	State: -- Federal: Species of Concern
Species listed are in accordance with state and federal Endangered Species Acts.		

Based on a review of the CNDDDB, Pine Hill ceanothus, Layne's butterweed, tricolored blackbird, El Dorado bedstraw, bald eagle, Red Hill's soaproot, Stebbin's morning glory, and El Dorado County mule ears have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.11.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, 50 to 60 sites have been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites.

#### 3.4.12 Glenn Valley Water District

Glenn Valley Water District (GVWD) entered into a long-term water service subcontract with the County of Colusa (1-07-20-W0219) on December 9, 1980. That subcontract expired on February 28, 1995, and was renewed for a 3-year interim period on December 12, 1994 (No. 1-07-20-W0219-IR1).

#### 3.4.12.1 General Description and Location

GVWD is located in the southern portion of the Sacramento Valley. The GVWD service area covers 1,965 acres. Of this total, about 248 acres are located outside the authorized POU. These lands are shown in Figure 3-13.

#### 3.4.12.2 Land Use and Land Use Policies

The GVWD service area is located within the unincorporated lands of Colusa County. The County General Plan designates these lands for primarily agricultural uses. All of the 248 acres located outside the authorized POU are expansion lands. Approximately 118 acres are in dryland agriculture, and the remaining 130 acres are dryland pasture supporting native vegetation. The 130 acres are classified as Class 6, non-irrigable lands.

The primary irrigated land in the GVWD service area consists of cotton and wheat, with the remainder used to grow tomatoes, melons, and other field crops.

#### 3.4.12.3 Geology and Soils

The GVWD service area consists of primarily ancient marine and alluvial deposits. The service area does extend into foothill soils that include undifferentiated loams and adobes. Along the valley floor soils are alluvial silt loams, clays, and sands. The sedimentary deposits help form some of the prime agricultural land. Some of these sediments can be poorly drained and pose limitations for certain agricultural crops (Sedway Cooke Associates, 1989).

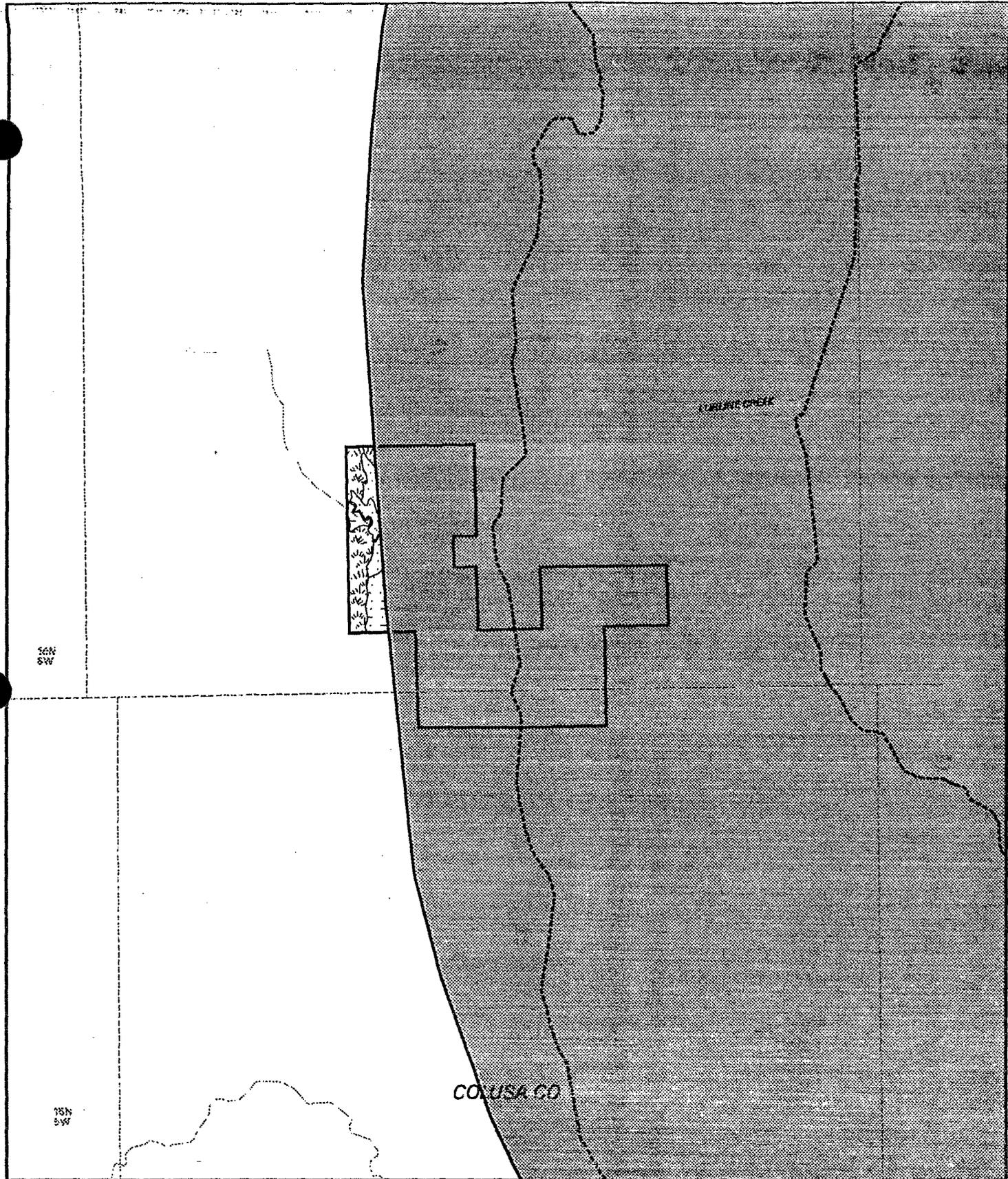
#### 3.4.12.4 Water Resources and Water Use

GVWD has a contract for the delivery of 1,730 acre-feet of water. CVP water use is restricted to agricultural purposes consistent with the CVP contract terms. GVWD has historically used up to 1,261 acre-feet of water per year.

#### 3.4.12.5 Groundwater Resources

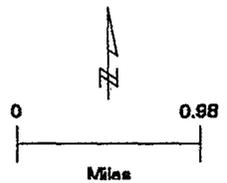
GVWD uses CVP water on lands within of the authorized POU; CVP water is not delivered outside the authorized POU. GVWD does not have alternative groundwater supply sources that could meet the water demand of future uses on these lands.

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- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

Glenn Valley Water District  
Figure 3-13



### 3.4.12.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-27 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	0	0	0	0	244	244
Valley-foothill riparian/fresh emergent wetland	0	0	0	0	4	4
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>248</b>	<b>248</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in these habitat types. Table D-2 lists the 10 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, one species (the peregrine falcon) is designated as endangered in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.12.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, one site has been recorded on lands outside the authorized POU. These lands were determined to have a moderate archaeological sensitivity with a high probability of encountering prehistoric sites during agricultural development.

### 3.4.13 Kanawha Water District

Kanawha Water District (KWD) entered into a long-term water service contract (No. 14-06-200-466-A) on April 19, 1963, and it was amended on May 18, 1972, and April 15, 1977. That contract expired on February 28, 1995. The contract was renewed for an interim period of 3 years effective March 1, 1995 (No. 14-06-200-466-A-IR1).

### 3.4.13.1 General Description and Location

KWD is located in the west-central portion of the Sacramento Valley. The KWD service area covers 15,967 acres. Of this total, about 902 acres are located outside the authorized POU. These lands are shown in Figure 3-14.

### 3.4.13.2 Land Use and Land Use Policies

The KWD service area is located within the unincorporated lands of Glenn County. The County General Plan designates these lands for primarily agricultural uses. KWD records indicate that the lands identified in the encroachment and expansion areas have historically been dryland agriculture or are classified as Class 6, non-irrigable lands.

Of the 902 acres located outside the authorized POU, 689 acres are encroachment lands and 213 acres are expansion lands. 689 acres are in an irrigated agricultural land use, and the remaining 213 acres are undeveloped and support native vegetation. The primary irrigated land in KWD's service area consists of alfalfa and wheat, with the remainder used to grow pasture and other field crops.

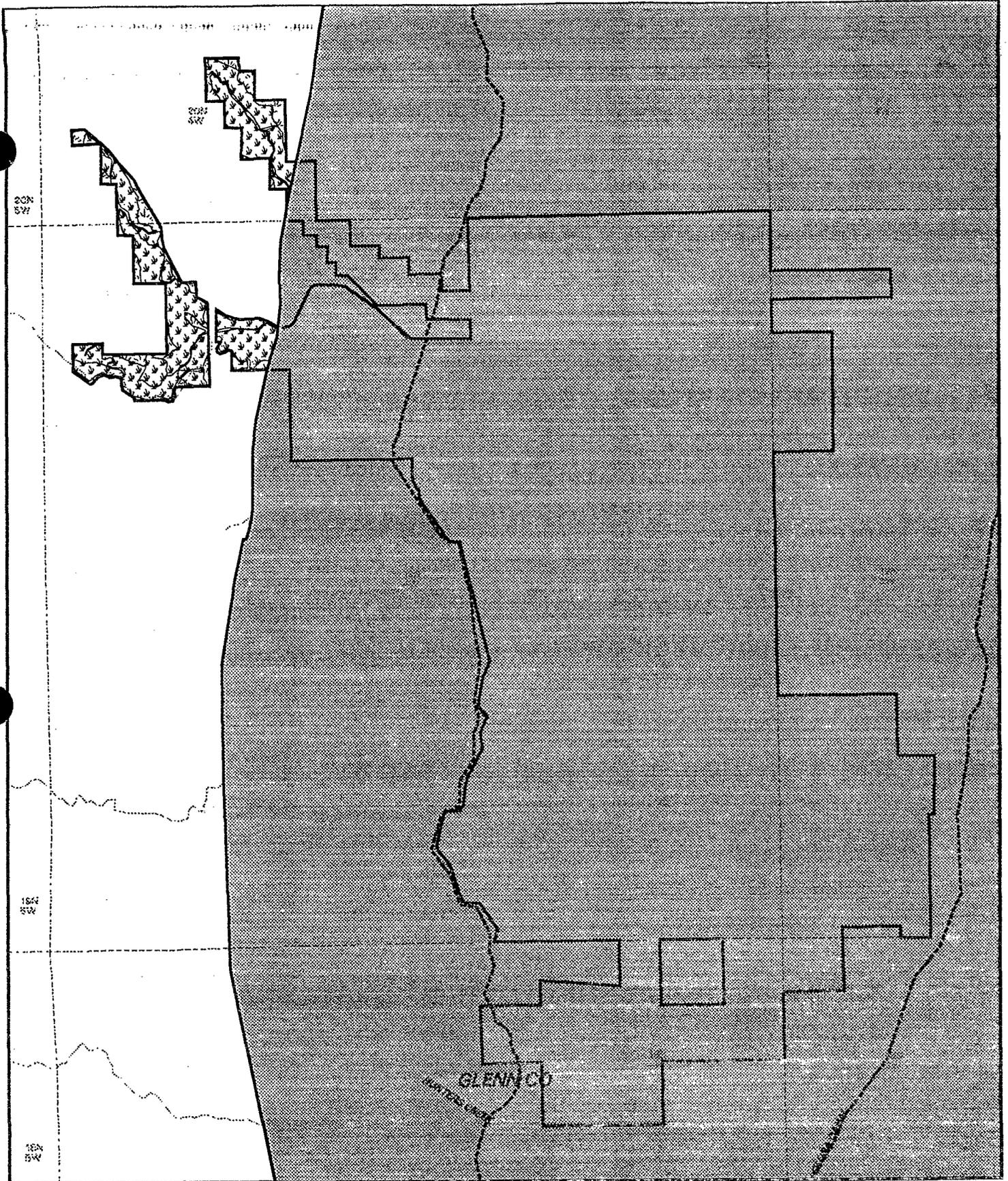
### 3.4.13.3 Geology and Soils

Soils in the vicinity of the KWD are well-drained, moderately permeable soils associated with low terraces and alluvial fans. Soils in this region are represented primarily by the following four soil associations: the Arbuckle-Kimball-Hillgate, the Hillgate-Arbuckle-Artois, the Tehama-Plaza, and the Myers-Hillgate. In addition, the southerly portion of KWD includes areas of relatively poorly drained, fine-textured basin soils of the Willows-Capay association. The Arbuckle series consists of nearly level to gently sloping, deep, well-drained soils that are gravelly and have a claypan. These soils are used for range, dryland farming, irrigated shallow-rooted crops, and forage crops.

The Tehama series consists of nearly level, well-drained soils. The Plaza series consists of nearly level and somewhat poorly-drained soils. These two soils are used for irrigated row, field, pasture, and tree crops. The Myers series are nearly level, deep, well-drained soils. These soils are primarily cultivated in dryland agriculture or irrigated cropland. The Willows-Capay series consists nearly level, poorly-drained soils. Willow soils are used primarily for rice, and Capay soils are used for a wide variety of crops (USDA, 1968).

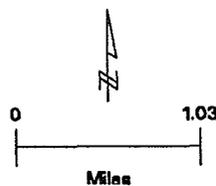
### 3.4.13.4 Water Resources and Water Use

KWD has a contract for the delivery of 45,000 acre-feet of water. CVP water is used for agricultural purposes, although the water service contract allows M&I service. Prior to the introduction of CVP water supplies, the 689 acres of irrigated encroached agricultural lands did not receive water from other sources. KWD has historically used up to 41,699 acre-feet of water per year. CVP water is KWD's only source of surface water supply.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Kanawha Water District  
Figure 3-14



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### 3.4.13.5 Groundwater Resources

KWD uses CVP water exclusively on lands outside the authorized POU and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

### 3.4.13.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-28 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	665	0	0	0	207	872
Valley-foothill riparian/fresh emergent wetland	24	0	0	0	6	30
<b>TOTAL</b>	<b>689</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>213</b>	<b>902</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 14 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, one species (the peregrine falcon) is designated as endangered in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.13.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the authorized POU. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering prehistoric sites.

### **3.4.14 Mountain Gate Community Services District**

Mountain Gate Community Services District (MGCSD) entered into a long-term water service contract (No. 14-06-200-6998) with Reclamation for CVP water delivery on March 12, 1958. MGCSD began delivery of the M&I water on August 1, 1963. MGCSD also receives up to 500 acre-feet of CVP water through a subcontract with Shasta County Water Agency (No. PW-4, entered into on February 9, 1982).

#### **3.4.14.1 General Description and Location**

MGCSD is located in the northern Sacramento Valley, south of Shasta Lake. The MGCSD service area covers 4,012 acres. Of this total, about 3,992 acres are located outside the authorized POU. These lands are shown in Figure 3-15.

#### **3.4.14.2 Land Use and Land Use Policies**

The MGCSD service area is located within the incorporated and unincorporated lands of Shasta County. The County General Plan designates these lands for primarily M&I and mineral resource uses.

Users in the contract service area include Calaveras Cement Company, which uses approximately 201 acre-feet of M&I water annually, and Fondale Rock Company, which uses 17 acre-feet annually. MGCSD is comprised primarily of rural residences, ranging in size from 2½ acres to 40 acres.

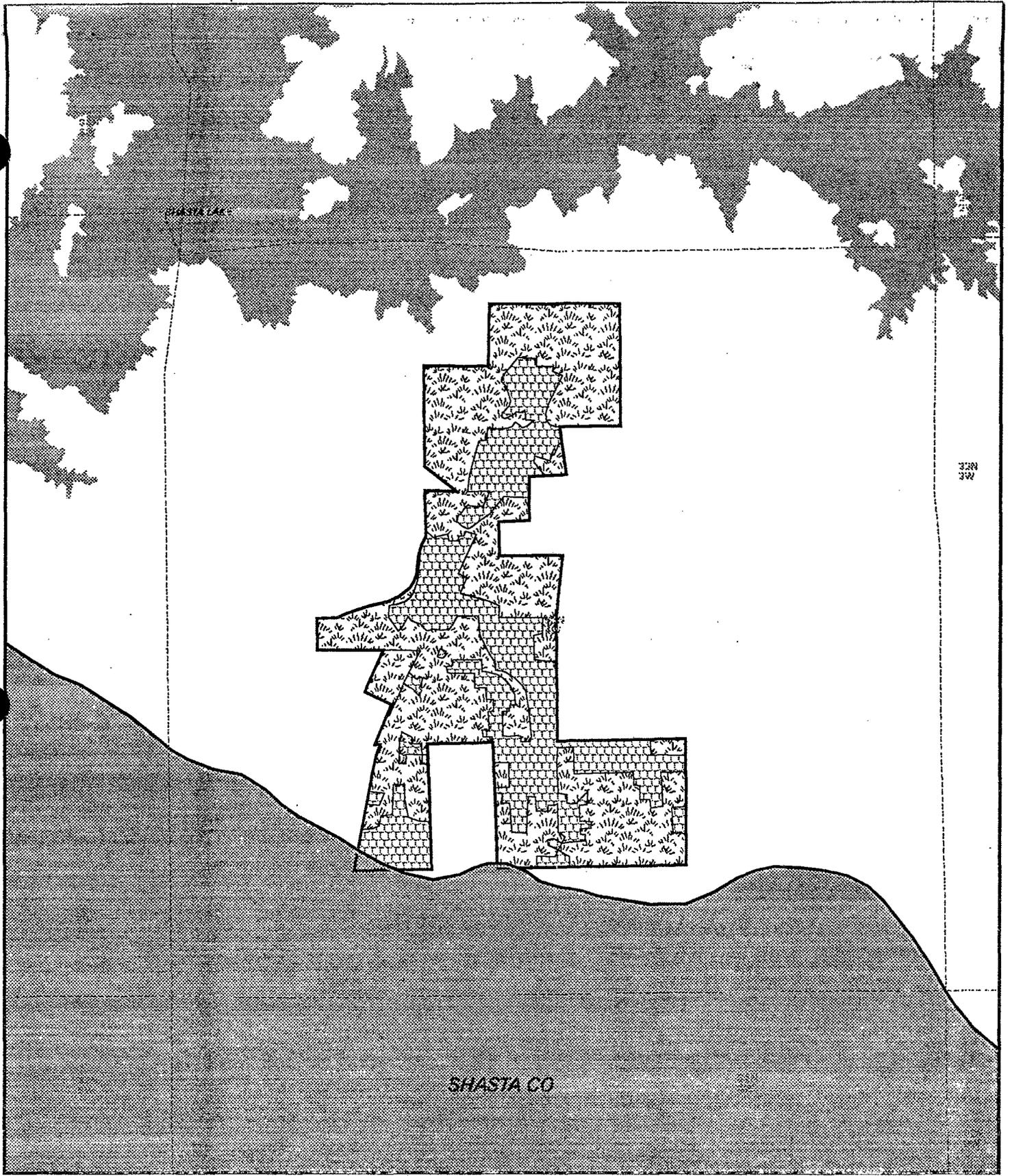
Of the 3,992 acres located outside the authorized POU, 1,406 acres are encroachment lands and 2,586 acres are expansion lands. 1,406 acres correspond to a M&I land use, and the remaining 2,586 acres are undeveloped and support native vegetation. Approximately 20 percent (798 acres) outside the authorized POU are not expected to be developed because of steep topography. There are no plans for major development in the future.

#### **3.4.14.3 Geology and Soils**

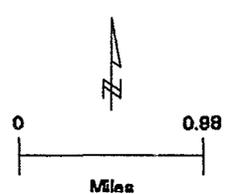
The MGCSD service area is located on primarily foothill geologic formations and soils that are interspersed with alluvial and valley deposits. The foothill deposits consist of well-drained gravelly loams, and the valley deposits consist of moderately well-drained cobbly clay loams.

#### **3.4.14.4 Water Resources and Water Use**

MGCSD has a contract with Reclamation for the delivery of 350 acre-feet of water and receives up to 500 acre-feet through a subcontract with Shasta County Water Agency. CVP water use is restricted to M&I purposes consistent with the CVP contract terms.



- |  |  |  |                              |
|--|--|--|------------------------------|
|  | <i>Existing Permitted Place of Use</i> |  | <i>Contract Service Area</i> |
|  | <i>Irrigated CVP</i>                   |  | <i>Canals</i>                |
|  | <i>Non-CVP Water Service</i>           |  | <i>County Boundary</i>       |
|  | <i>Municipal &amp; Industrial CVP</i>  |  |                              |
|  | <i>Dryland Agriculture</i>             |  |                              |
|  | <i>Native Vegetation</i>               |  |                              |
|  | <i>Place Of Use Boundary</i>           |  |                              |



Mountain Gate Community Services District  
Figure 3-15



C - 0 9 3 5 2 6

to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, three species (the California red-legged frog, Shasta salamander, and bald eagle) are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, the Shasta salamander, Shasta sideband snail, and silky cryptantha have been observed on lands within the CVP contract service area outside the authorized POU.

#### **3.4.14.7 Cultural Resources**

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites in the area during agricultural development.

### **3.4.15 Orland-Artois Water District**

Orland-Artois Water District (OAWD) entered into a long-term water service contract (No. 14-06-200-8382A) on February 26, 1976. That contract expired on February 28, 1995. The contract was renewed for an interim period of 3 years effective March 1, 1995 (No. 14-06-200-8382A-IR1).

#### **3.4.15.1 General Description and Location**

OAWD is located in northern Sacramento Valley. The OAWD service area covers 31,292 acres. Of this total, about 111 acres are located outside the authorized POU. These lands are shown in Figure 3-16.

#### **3.4.15.2 Land Use and Land Use Policies**

The OAWD service area is located within the incorporated and unincorporated lands of Glenn County. The County General Plan designates these lands for primarily agricultural and rangeland uses.

OAWD records indicate that all 111 acres identified in the encroachment area that currently receive CVP water were previously irrigated with groundwater.

The lands that are identified in the encroachment and expansion areas have historically been supplied by a water source other than CVP. Many wells served the community prior to receiving CVP water. Stillwater Creek was another surface water source, but it is no longer available. Expansion of the community occurred, in part, because of a reliable CVP water supply. The volume of CVP water delivered to MGCSD outside the authorized POU is approximately 588 acre-feet.

CVP water is delivered to MGCSD from Shasta Lake for use within the MGCSD service area. CVP water and groundwater are MGCSD's only sources of surface water supply.

#### 3.4.14.5 Groundwater Resources

These lands outside the authorized POU have access to a limited supply of water from district-owned groundwater wells as an alternative to receiving CVP water. The quantity of available groundwater would be inadequate to meet the water demands of the district. There is no indication that groundwater use in this region would be hindered by water quality issues.

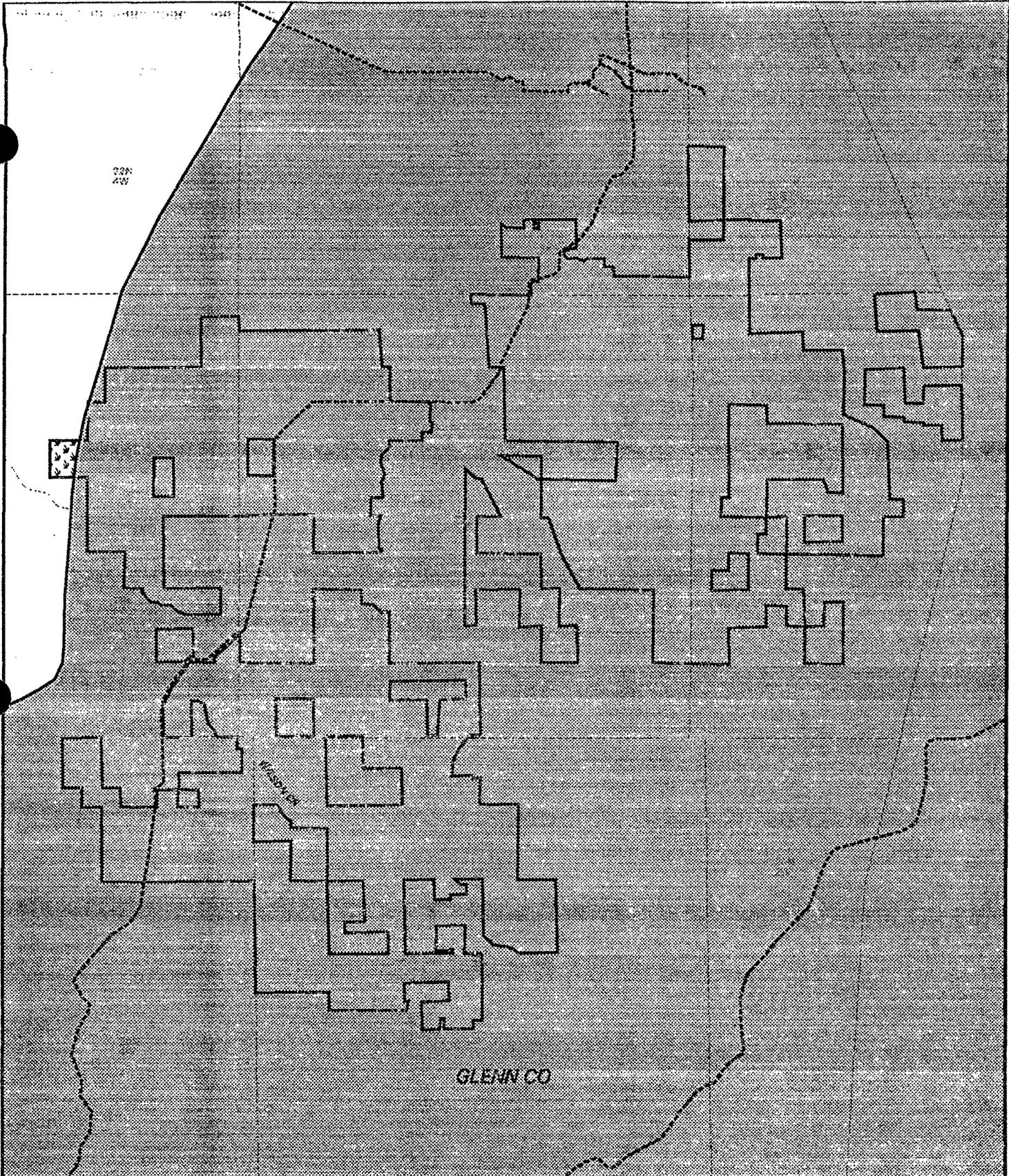
#### 3.4.14.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by four vegetative community/habitat types. Table 3-29 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	254	924	1,178
Valley-foothill riparian/fresh emergent wetland	0	0	0	23	36	59
Annual grassland	0	0	0	839	794	1,633
Mixed chaparral	0	0	0	290	832	1,122
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,406</b>	<b>2,586</b>	<b>3,992</b>

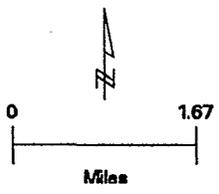
\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 16 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior



-  Existing Permitted Place of Use
-  Irrigated CVP
-  Non-CVP Water Service
-  Municipal & Industrial CVP
-  Dryland Agriculture
-  Native Vegetation
-  Place Of Use Boundary
-  Contract Service Area
-  Canals
-  County Boundary

Orland-Artois Water District  
Figure 3-16



### 3.4.15.3 Geology and Soils

Soils in the vicinity of OAWD are well-drained, moderately permeable soils associated with low terraces and alluvial fans. Soils in this region are represented primarily by the following four soil associations: the Arbuckle-Kimball-Hillgate, the Hillgate-Arbuckle-Artois, the Tehama-Plaza, and the Myers-Hillgate. In addition, the northerly portion of OAWD includes areas of well-drained to excessively drained soils of the Cortina-Orland association.

The Arbuckle series consists of nearly level to very gently sloping, deep, well-drained soils that are gravelly. These soils are used for many irrigated row crops, field crops, and orchard crops. The Kimball and Artois series consist of nearly level, well-drained soils that have a claypan. These soils are used for range, dryland agriculture, and irrigated shallow-rooted field and forage crops.

The Tehama series are nearly level, well-drained soils, primarily used for irrigated row, field, pasture, and tree crops. The Plaza series consists of nearly level, poorly-drained soils primarily used to grow rice and irrigated pasture. The Myers series are deep, nearly level soils that are well-drained. These soils are primarily cultivated in dryland agriculture or irrigated cropland. The Cortina and Orland series consists of well-drained to excessively drained soils. These two soils are primarily used to grow alfalfa, orchards, and irrigated row and field crops (USDA, 1968).

### 3.4.15.4 Water Resources and Water Use

OAWD has a contract for the delivery of 53,000 acre-feet of water. CVP water use is restricted to agricultural purposes consistent with the CVP contract terms. Prior to the introduction of CVP water supplies, all 111 acres of irrigated agricultural lands were supplied by groundwater. CVP water is OAWD's only source of surface water supply. Currently all 111 acres are irrigated by CVP water. In 1995, the volume of CVP water delivered outside the authorized POU was approximately 300 to 400 acre-feet.

The primary irrigated land in the OAWD contract service area consists of almonds, rice, and wheat, with the remainder used to grow pasture, alfalfa, and other field crops.

### 3.4.15.5 Groundwater Resources

OAWD lands outside the authorized POU have access to an unspecified amount of groundwater from private wells; however, the volume of available groundwater is limited. There is no indication that groundwater use would be hindered by water quality issues.

### 3.4.15.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by one vegetative community/habitat type. Table 3-30 identifies this type and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	0	111	0	0	0	111
<b>TOTAL</b>	<b>0</b>	<b>111</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>111</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in this community and habitat type. Table D-2 lists the seven special-status species, designated by federal and state resource agencies, that are expected to have been present on encroached lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, one species (the Swainson's hawk) is designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### **3.4.15.7 Cultural Resources**

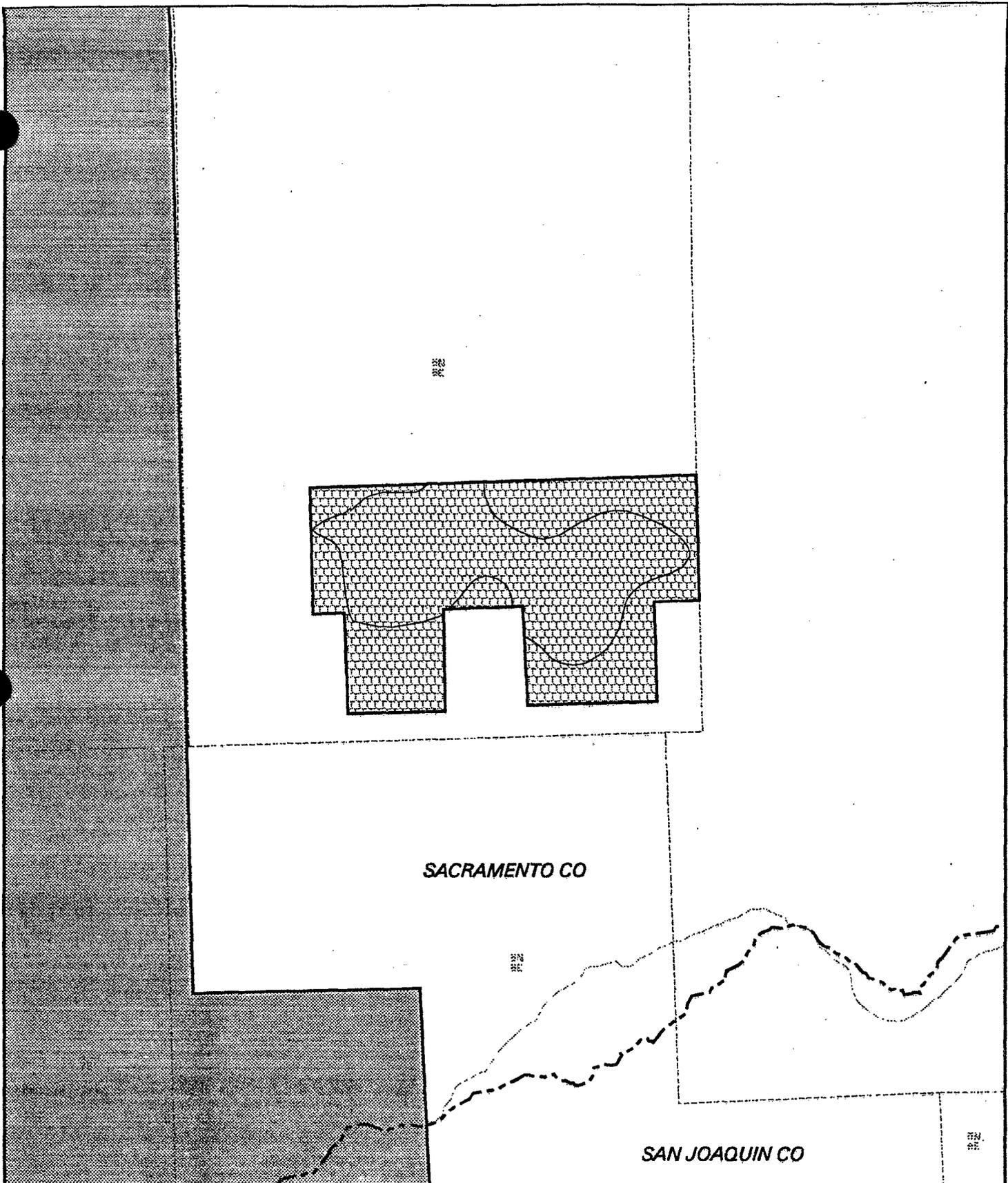
Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the authorized POU. These lands were determined to have a low archaeological sensitivity with a low probability of encountering prehistoric sites during agricultural development.

### **3.4.16 Sacramento Municipal Utility District**

Sacramento Municipal Utility District (SMUD) entered into a long-term water service contract (No. 14-06-200-5198A) with Reclamation for CVP water delivery on November 20, 1970.

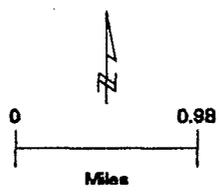
#### **3.4.16.1 General Description and Location**

SMUD is located in the southeastern portion of Sacramento County. The SMUD service area covers 2,830 acres. The entire service area is located outside the authorized POU. These lands are shown in Figure 3-17.



- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

Sacramento Municipal Utility District  
Figure 3-17



#### 3.4.16.2 Land Use and Land Use Policies

The SMUD service area is located within the unincorporated lands of Sacramento County. The County General Plan designates these lands for public facilities (primarily for the Rancho Seco nuclear power plant). All of the 2,830 acres located outside the authorized POU are encroachment lands that correspond to a M&I land use.

#### 3.4.16.3 Geology and Soils

SMUD lands are located on high terrace deposits composed of well-drained soils overlying a cemented hardpan.

#### 3.4.16.4 Water Resources and Water Use

Water provided pursuant to this contract is delivered from the Folsom South Canal to SMUD's Rancho Seco nuclear power plant located on 2,830 acres. SMUD has used its water supply for power production at the Rancho Seco nuclear power plant. Use of this water for this purpose is restricted to the immediate area of the power plant.

SMUD's contract is for the delivery of 60,000 acre-feet of CVP water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. SMUD has an agreement with the City of Sacramento for the use of up to 15,000 acre-feet of non-CVP water.

When the nuclear power plant was operational, some of the water was used in the cooling towers to condense the spent steam for recirculation. Standby cooling water was stored in a small lake that provided recreational opportunities for the public. Recreation facilities around the lake include picnic tables, boat ramps, a swimming beach, restrooms, and parking areas.

The plant was decommissioned in 1988 and now requires only small amounts of water to cool the nuclear fuel stored onsite. Water for the power plant and Rancho Seco Park is supplied by a pumping facility at Folsom South Canal. An onsite park well and pump supply water for two permanent residences and a snack bar. Water is also used to maintain the lake and recreation facilities and the landscaping around the power plant. In 1994, 1,611 acre-feet of CVP water was delivered to the service area. In 1995, 2,959 acre-feet of CVP water was delivered.

#### 3.4.16.5 Groundwater Resources

SMUD lands outside the authorized POU have access to 352 acre-feet per year of groundwater from district-owned wells. There is no indication that groundwater use would be limited by water quality issues.

### 3.4.16.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-31 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual grassland	0	0	2,603	0	0	2,603
Fresh emergent wetland	0	0	58	0	0	58
Open water	0	0	169	0	0	169
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>2,830</b>	<b>0</b>	<b>0</b>	<b>2,830</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 22 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-32 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, northern hardpan vernal pool habitat has been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.16.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no specific sites have been recorded. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering small habitation locales/lithic scatters.

Habitat	Species	Status
Annual grassland Fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Fresh emergent wetland	Vernal pool fairy shrimp	State: -- Federal: Threatened
Annual grassland	Vernal pool tadpole shrimp	State: -- Federal: Endangered
Annual grassland	Swainson's hawk	State: Threatened Federal: --
Annual grassland	Sacramento orcutt grass	State: Endangered Federal: Proposed Endangered
Fresh emergent wetland	Bogg's Lake hedge-hyssop	State: Endangered Federal: --
Species listed are in accordance with state and federal Endangered Species Acts.		

### **3.4.17 San Benito County Water District**

San Benito County Water District (SBCWD) entered into a long-term water service contract (No. 8-07-20-W0130) with Reclamation for CVP water delivery on February 28, 1992.

#### **3.4.17.1 General Description and Location**

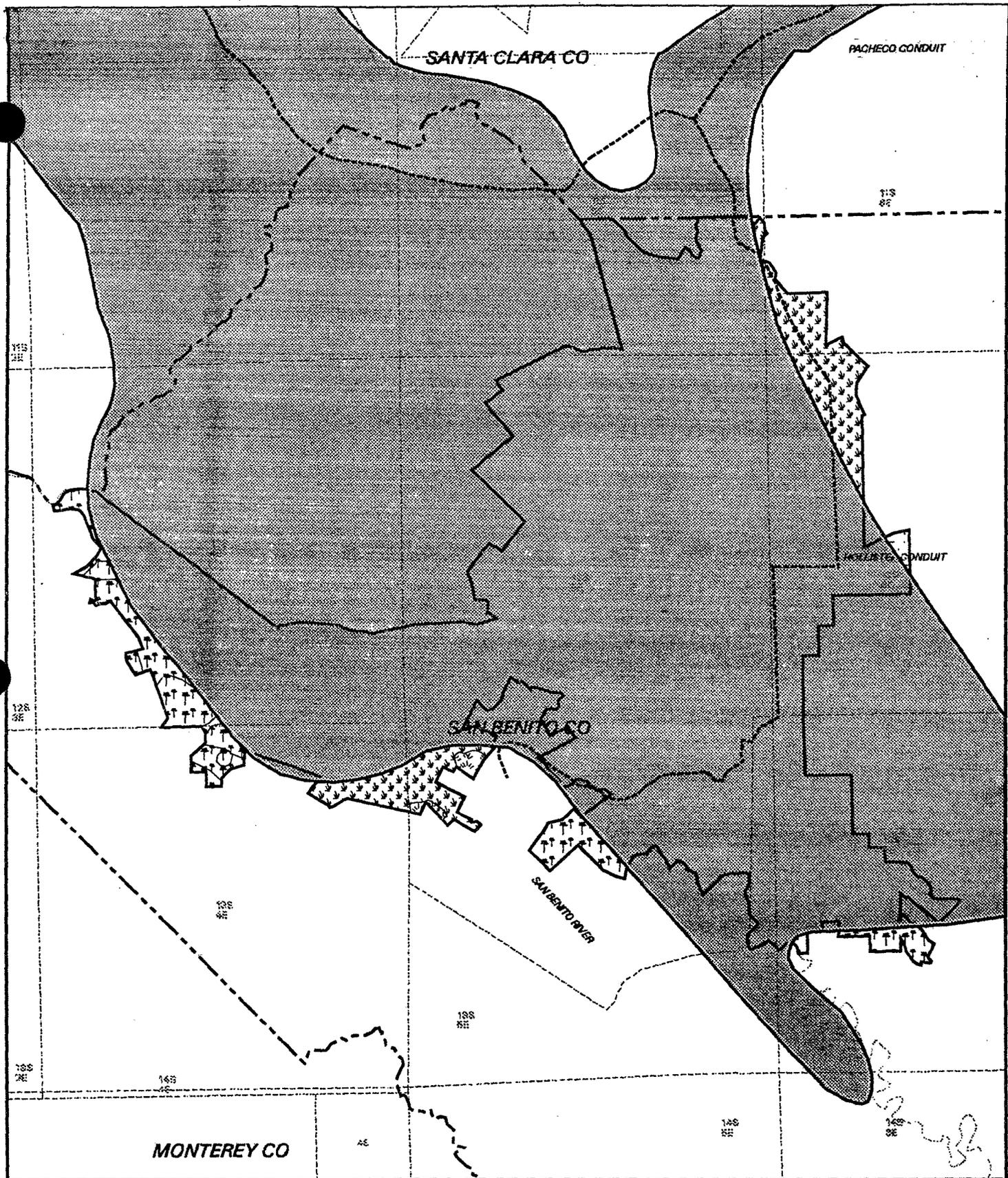
SBCWD is located in northern San Benito County, south of Santa Clara Valley. The SBCWD service area covers 47,540 acres. Of this total, about 5,107 acres are located outside the authorized POU. These lands are shown in Figure 3-18.

#### **3.4.17.2 Land Use and Land Use Policies**

The SBCWD service area is located within the incorporated and unincorporated lands of San Benito County. The County General Plan designates these lands for primarily general agriculture, rangeland, urban, rural residential, flood zone, and parks and recreation uses.

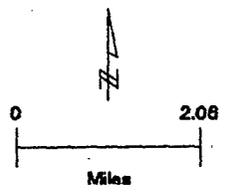
Of the 5,107 acres located outside the authorized POU, 2,564 acres are encroachment lands and 2,543 acres are expansion lands. 2,564 acres are in an agricultural land use receiving CVP water supplies, 1,877 acres are in an agricultural land use with non-CVP water supplies, 96 acres are in dryland agriculture, and 420 acres are in a M&I land use with non-CVP water supplies. The remaining 150 acres are undeveloped and support native vegetation.

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- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

San Benito County Water District  
Figure 3-18



C - 0 9 3 5 3 7

### 3.4.17.3 Geology and Soils

SBCWD is primarily alluvial plains, fans, and stream benches. In low areas of alluvial plains and fans, the soils are poorly drained clay to clay loam. All other soils in this area are well-drained clay, silt, and gravelly loams.

### 3.4.17.4 Water Resources and Water Use

SBCWD has a contract for the delivery of 43,800 acre-feet of water. CVP water use is restricted to agricultural and M&I purposes consistent with the CVP contract terms.

CVP water delivery service to the northeast area of SBCWD located outside the authorized POU began in 1990. The majority of the northeast area of SBCWD located outside the authorized POU currently receives CVP water for irrigation of orchards, row crops, and pasture. Prior to receiving CVP water, groundwater was used. A small amount of land in the northeast area of SBCWD was historically and is currently dryland agriculture.

The southeast portion of SBCWD outside the authorized POU uses CVP water for irrigation and M&I use. It previously was dryland agriculture, native pasture, or orchard using groundwater. The adjacent area to the west does not receive CVP water and is developed for M&I use with groundwater. Further to the west, lands currently receive CVP water, and also use groundwater for row crops, native pasture, and M&I use. Initial CVP water delivery service to these areas was in 1990.

The western area, which includes the City of San Juan Bautista and other M&I uses, does not currently receive CVP water. The agricultural uses in that area are row crops, pasture, and orchards irrigated with groundwater. The northwestern area does not currently receive CVP water; it is an agricultural area with row crops and orchards, and is currently irrigated with groundwater.

SBCWD has also installed groundwater wells to support existing land uses. Prior to the introduction of CVP water supplies, the 420 acres of M&I lands and the 4,537 acres of agricultural lands were supplied by other sources of water. SBCWD has historically used up to 20,117 acre-feet of water per year.

### 3.4.17.5 Groundwater Resources

SBCWD lands outside the authorized POU have access to approximately 8,200 acre-feet per year of groundwater from district-owned wells. There is no indication that groundwater use would be limited by water quality issues.

### 3.4.17.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-33 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill riparian/fresh emergent wetland	0	20	0	0	27	47
Mixed chaparral	0	0	0	0	507	507
Annual grassland	0	2,544	0	0	2,009	4,553
<b>TOTAL</b>	<b>0</b>	<b>2,564</b>	<b>0</b>	<b>0</b>	<b>2,543</b>	<b>5,107</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 21 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, four species (the California red-legged frog, San Joaquin kit fox, valley elderberry longhorn beetle, and peregrine falcon) are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDB, the California red-legged frog, San Joaquin kit fox, and San Joaquin saltbush have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.17.7 Cultural Resources

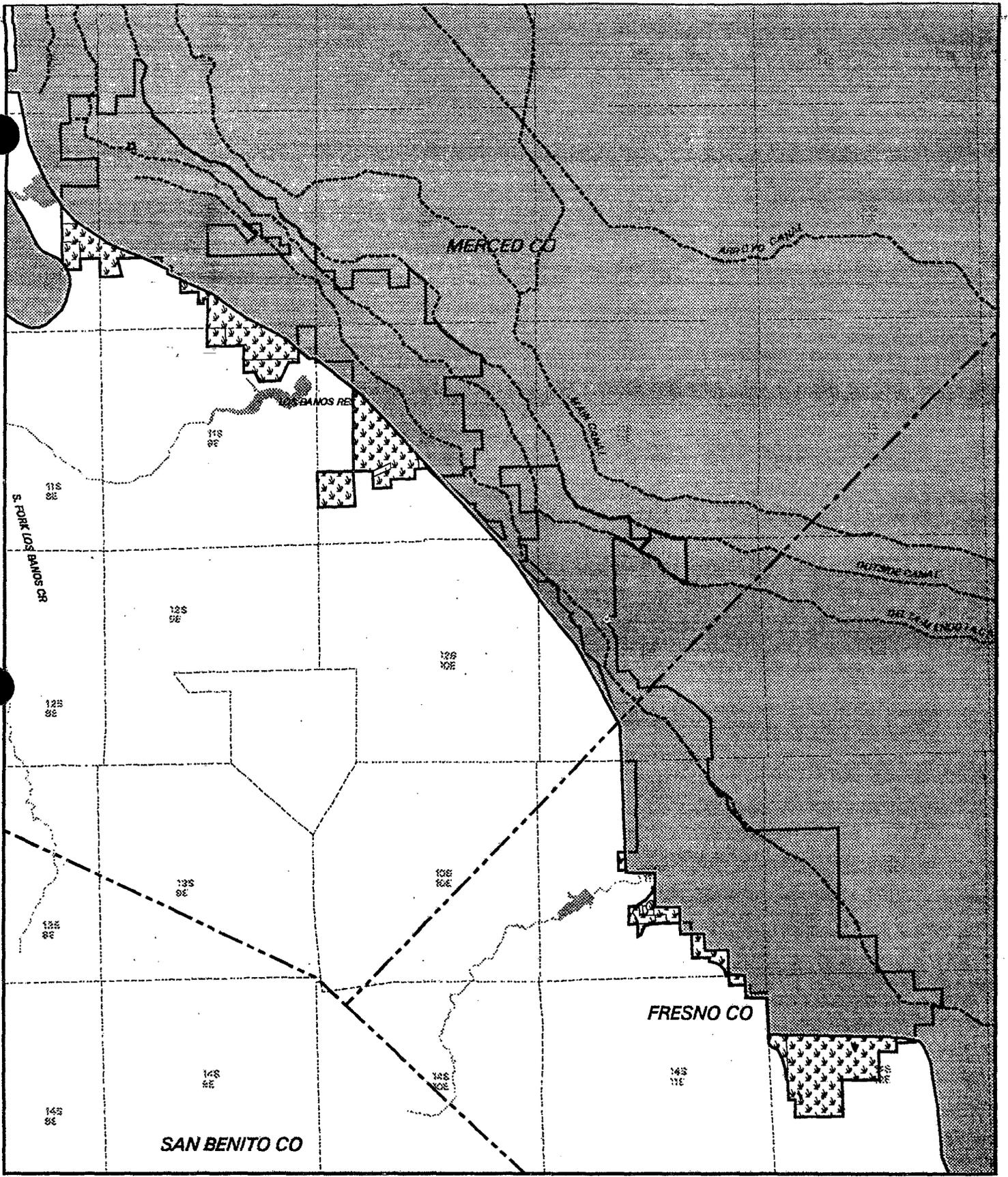
Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, one site has been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering small habitation locales and historic sites during agricultural development.

#### 3.4.18 San Luis Water District

San Luis Water District (SLWD) entered into a long-term water service contract (No. 14-06-200-7773A) with Reclamation for CVP water delivery on June 18, 1974.

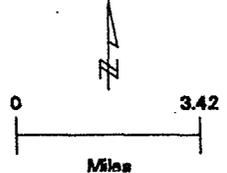
##### 3.4.18.1 General Description and Location

SLWD is located in western Fresno County and southwestern Merced. The SLWD service area covers 64,668 acres. Of this total, about 9,609 acres are located outside the authorized POU. These lands are shown in Figure 3-19.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

San Luis Water District  
Figure 3-19



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### 3.4.18.2 Land Use and Land Use Policies

The SLWD service area is located within the unincorporated lands of Fresno and Merced counties. The Fresno County General Plan designates these lands for primarily general agriculture and rangeland, and the Merced County General Plan designates these lands for rangeland.

Most of the lands are irrigated. Lands owned by the United States have never received water from SLWD. Prior to receiving CVP water, the lands were cultivated in the winter in dryland agriculture and were used for pasture. All lands outside the authorized POU (9,609 acres) are encroachment lands and were first irrigated using CVP water in 1975.

### 3.4.18.3 Geology and Soils

The San Joaquin Valley is a structural trough bounded by the Coast Range on the west. The valley deposits consist of several thousand feet of Cenozoic sedimentary rocks and unconsolidated alluvium that reflect their geologic sources in the surrounding highlands and their fluvial and alluvial depositional environments.

Eocene marine rocks, exposed in the Coast Range, are the primary source of elevated selenium concentrations in soil, sediment, and groundwater in the San Joaquin Valley. Particulates and dissolved ions are transported to the valley floor by weathering and erosion of the mineral-rich source rocks. Soils in the San Joaquin Valley with selenium concentrations above the median concentration for U.S. soils of 0.3 mg/kg (Shacklette et al., 1974) are adjacent to the Coast Range where marine rocks are exposed (Gilliom et al., 1989).

Soils in the SLWD are located in the valley basin or on alluvial fans of the coast range foothills, and are generally saline or sodic with selenium concentrations between 0.13 and 1.07 mg/kg (Tidball et al., 1986).

### 3.4.18.4 Water Resources and Water Use

SLWD has a contract for the delivery of 125,080 acre-feet of water. CVP water use is restricted to agricultural and M&I purposes consistent with the CVP contract terms. CVP water was first delivered to the areas outside the authorized POU in 1975.

Prior to the introduction of CVP water supplies, agricultural lands and pastures outside the authorized POU did not receive water supplies from other sources. Maximum usage by SLWD occurred in 1984 and totaled 144,894 acre-feet. Average usage between 1978 and 1989-90 totaled 125,029 acre-feet per year.

### 3.4.18.5 Groundwater Resources

SLWD uses CVP water exclusively on lands outside the authorized POU, and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

### 3.4.18.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-34 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Alkali scrub	1,601	0	0	0	0	1,601
Annual grassland	7,928	0	0	0	0	7,928
Valley-foothill riparian/ fresh emergent wetland	80	0	0	0	0	80
<b>TOTAL</b>	<b>9,609</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,609</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 22 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-35 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, the tricolored blackbird and blunt-nosed leopard lizard have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.18.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, three to four sites may be present on lands outside the authorized POU. These lands were determined to have a low archaeological sensitivity with a high probability of encountering small habitation locales and historic sites during agricultural development and a low probability of encountering such sites during M&I development.

Table 3-35 Threatened and Endangered Species within San Luis Water District		
Habitat	Species	Status
Alkali scrub Annual grassland	San Joaquin woolly-threads	State: -- Federal: Endangered
Alkali scrub Annual grassland	Hoover's eriastrum	State: -- Federal: Threatened
Alkali scrub	Blunt-nosed leopard lizard	State: Endangered Federal: Endangered
Valley-foothill riparian/fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Alkali scrub	Fresno kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	Giant kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin antelope squirrel	State: Threatened Federal: Species of Concern
Alkali scrub Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Species listed are in accordance with state and federal Endangered Species Acts.		

### 3.4.19 Santa Clara Valley Water District

Santa Clara Valley Water District (SCVWD) entered into a long-term water service contract (No. 7-07-20-W0023) with Reclamation for CVP water delivery on June 7, 1977.

#### 3.4.19.1 General Description and Location

SCVWD is located in Santa Clara County south of the San Francisco Bay. The contract service area covers the entire county of Santa Clara even though there are no plans to deliver CVP water to most of that area.

Of the 835,200 acres in the County, about 592,988 acres are located outside the authorized POU. These lands are shown in Figure 3-20.

#### 3.4.19.2 Land Use and Land Use Policies

The SCVWD service area is located within the incorporated and unincorporated lands of Santa Clara County. The Santa Clara County General Plan designates these lands for all uses except flood zone.

Of the 592,988 acres located outside the authorized POU, 27,669 acres are encroachment lands and 565,319 acres are expansion lands. 25,498 acres correspond to an M&I land use, 2,171 acres are in irrigated agricultural uses, and the remaining 565,319 acres are undeveloped and support native vegetation.

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### 3.4.19.3 Geology and Soils

SCVWD land outside the authorized POU are located on foothill and mountain formations of the Coast Range. These lands consist of upland soils ranging from shallow to deep, well-drained loams. The loams vary in content throughout SCVWD's service area.

### 3.4.19.4 Water Resources and Water Use

SCVWD has a contract for the delivery of 152,500 acre-feet of water. The contract specifies that 119,400 acre-feet of water are designated for M&I use, and the maximum available for agricultural use is 33,100 acre-feet. The contract provides for the conversion of irrigation water to M&I.

SCVWD also has groundwater wells to support existing land uses. Water from the SWP and Hetch Hetchy also is supplied to the County. Prior to the introduction of CVP water supplies, the M&I lands and the agricultural lands received water supplies from other sources. SCVWD has historically used up to 118,688 acre-feet of CVP water per year.

### 3.4.19.5 Groundwater Resources

SCVWD lands outside the authorized POU have access to an unspecified amount of groundwater from privately owned wells. There is no indication that groundwater use would be limited by water quality issues.

### 3.4.19.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by four vegetative community/habitat types. Table 3-36 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Annual/perennial grassland	0	2,136	0	23,346	139,986	165,468
Montane hardwood	0	27	0	427	113,744	114,198
Valley-foothill hardwood	0	7	0	1,027	174,116	175,150
Mixed chaparral	0	1	0	698	137,473	138,172
<b>TOTAL</b>	<b>0</b>	<b>2,171</b>	<b>0</b>	<b>25,498</b>	<b>565,319</b>	<b>592,988</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 43 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, the species in Table 3-37 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Habitat	Species	Status
Valley-foothill hardwood	California red-legged frog	State: Species of Concern Federal: Threatened
Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Annual/perennial grassland	Bay checkerspot butterfly	State: -- Federal: Threatened
Perennial grassland	Coyote ceanothus	State: -- Federal: Endangered
Perennial grassland	Santa Clara Valley dudleya	State: -- Federal: Endangered
Perennial grassland	Fountain thistle	State: Endangered Federal: Endangered
Valley-foothill hardwood	California sea blite	State: -- Federal: Endangered
Valley-foothill hardwood	Saltmarsh harvest mouse	State: Endangered Federal: Endangered
Valley-foothill hardwood	California clapper rail	State: Endangered Federal: Endangered
Valley-foothill hardwood	California least tern	State: Endangered Federal: Endangered
Valley-foothill hardwood	California black rail	State: Threatened Federal: Species of Concern

Species listed are in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, many special-status species have been observed on lands within the CVP contract service area outside the authorized POU. These include the California tiger salamander, golden eagle, foothill yellow-legged frog, talus fritillary, fragrant fritillary, Sharsmith's harebell, Mt. Hamilton thistle, Mt. Diablo phacelia, Brandegee's eriastrum, California red-legged frog, rock sanicle, Mt. Hamilton coreopsis, long-eared owl, Mt. Hamilton jewelflower, edgewood blind harvestman, most beautiful jewelflower, Santa Clara Valley dudleya, San Joaquin kit fox, Metcalf Canyon jewelflower, Bay checkerspot butterfly, black swift, tricolored blackbird, coyote ceanothus, Santa Cruz tarplant, and Congdon's tarplant.

### 3.4.19.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, about 450 sites have been recorded on lands outside the authorized POU. These lands were determined to have a high archaeological sensitivity with a low to moderate probability of encountering prehistoric sites during agricultural development and a high probability of encountering prehistoric sites during M&I development.

### 3.4.20 Shasta Community Services District

Shasta Community Services District (SCSD) entered into a long-term water service contract (No. 14-06-200-862A) on March 25, 1964. The District began delivery of the water for M&I use in July 1964.

#### 3.4.20.1 General Description and Location

SCSD is located in Shasta County northwest of the City of Redding. The SCSD service area covers 6,294 acres. Of this total, about 51 acres are located outside the authorized POU. These lands are shown in Figure 3-21.

#### 3.4.20.2 Land Use and Land Use Policies

The SCSD service area is located within the unincorporated lands of Shasta County. The Shasta County General Plan designates these lands for rural residential, commercial, public lands, and open space uses.

The 51 acres located outside the authorized POU are expansion lands, currently in their natural habitat. Although they are capable of being developed, there are no plans to develop them in the near future. SCSD primarily has rural residences, consisting of 2½-acre minimum to 40-acre parcels. There is no major industrial enterprise in the area.

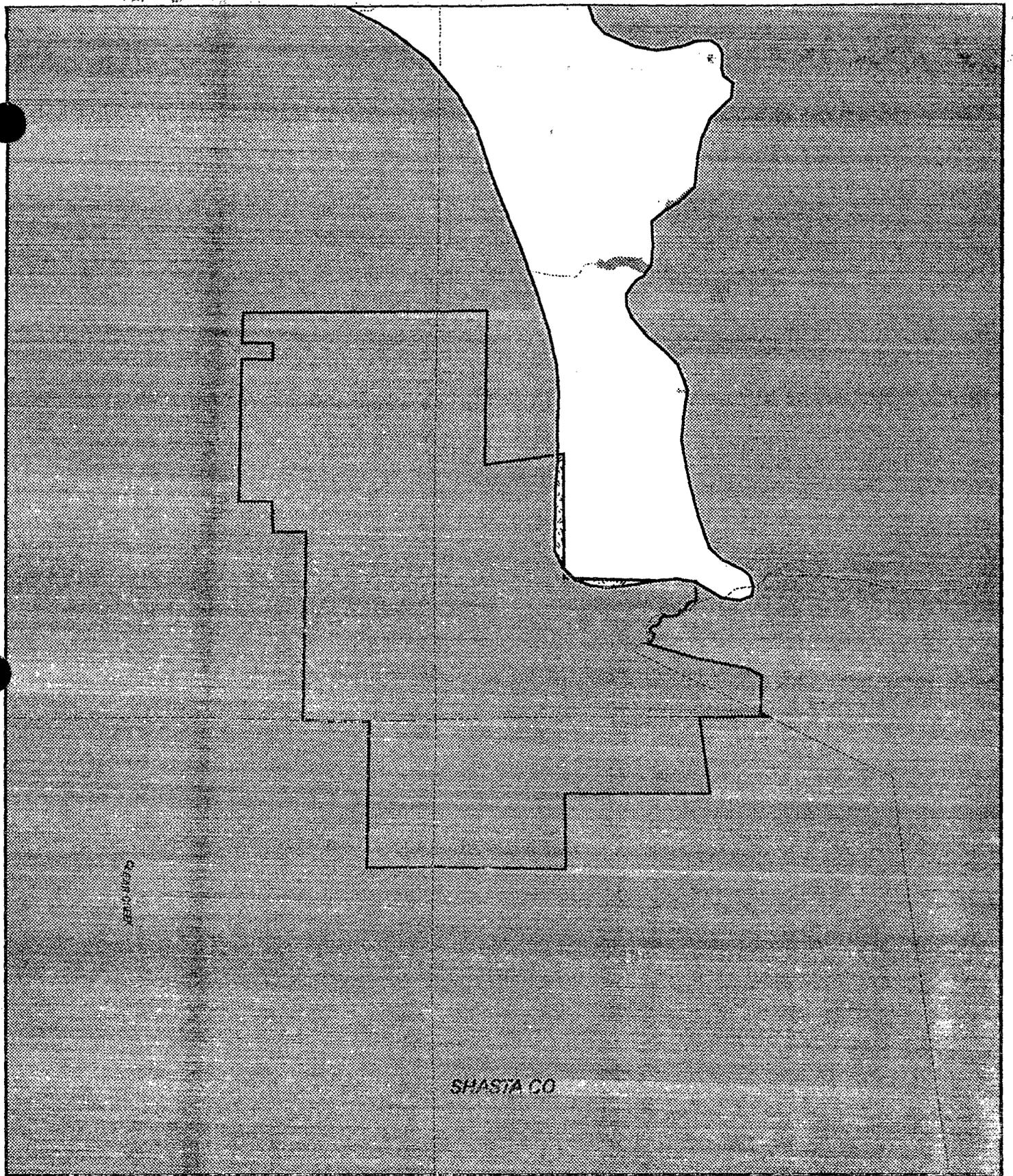
#### 3.4.20.3 Geology and Soils

SCSD is located in areas consisting of both foothill and mountain geologic formations. Soils in these areas range from metamorphosed volcanic rock and gravelly loams to coarse sands underlain by granitic rocks.

#### 3.4.20.4 Water Resources and Water Use

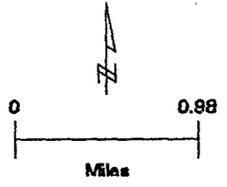
SCSD has a contract for the delivery of 1,000 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. CVP water is not delivered to lands outside the authorized POU.

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- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

Shasta Community Services District  
Figure 3-21



CVP water is SCSD's primary source of surface water supply. There are a few privately owned wells in the district. CVP water is delivered to the district downstream of the Spring Creek Conduit.

### 3.4.20.5 Groundwater Resources

SCSD does not use CVP water on lands outside the authorized POU. The area is not currently developed. There are a few privately owned wells within the district. It is unknown whether groundwater supply sources could meet the water demand of future uses on these lands.

### 3.4.20.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-38 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	0	16	16
Mixed chaparral	0	0	0	0	35	35
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>51</b>	<b>51</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 11 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, four species (the Shasta salamander, Swainson's Hawk, peregrine falcon, and bald eagle) are designated as threatened or endangered in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.20.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, one site has been recorded on lands outside the authorized POU. These lands were determined to have a moderate archaeological sensitivity with a moderate probability of encountering prehistoric sites.

### 3.4.21 Shasta County Service Area No. 6—Jones Valley

Shasta County Service Area No. 6—Jones Valley (Jones Valley) entered into a long-term water service contract (No. PW-1) with Shasta County Water Agency (No. 14-06-200-3367A) on July 22, 1980. That contract will expire December 31, 2004.

#### 3.4.21.1 General Description and Location

Jones Valley is located in Shasta County, northeast of the City of Redding, just south of Shasta Lake. The Jones Valley service area covers 1,171 acres. The entire service area is located outside the authorized POU. These lands are shown in Figure 3-22.

#### 3.4.21.2 Land Use and Land Use Policies

The Jones Valley service area is located within the unincorporated lands of Shasta County. The Shasta County General Plan designates these lands for rangeland, rural residential, and open space uses.

The service area is primarily rural residential, with 2½-acre to 40-acre parcels. There are no plans for major development in the area.

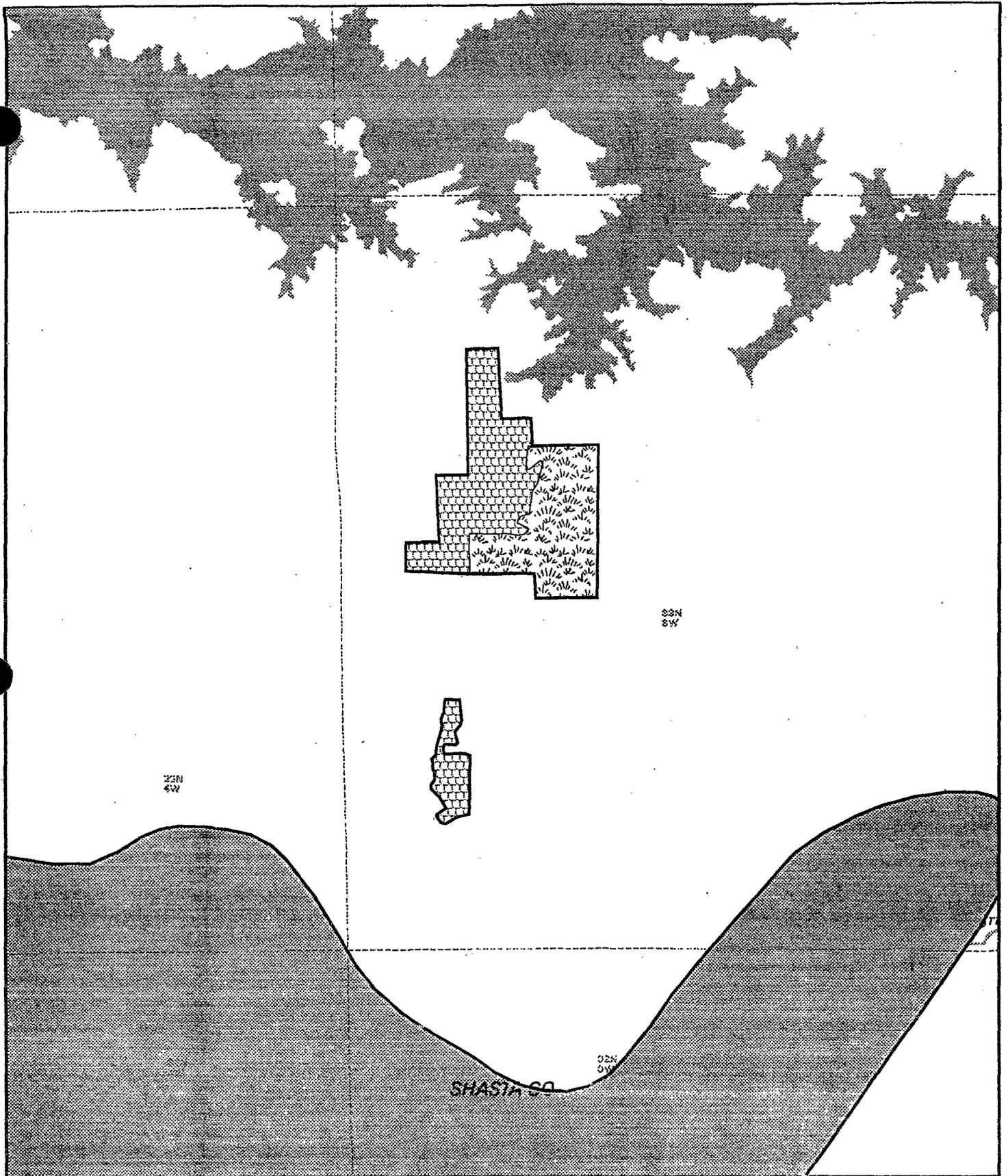
Of the 1,171 acres located outside the authorized POU, 668 acres are encroachment lands and 503 acres are expansion lands. 668 acres correspond to a M&I land use, and the remaining 503 acres are undeveloped and support native vegetation.

#### 3.4.21.3 Geology and Soils

The majority of Jones Valley is found on alluvial valley deposits; however, the Jones Valley area extends into areas composed of foothill materials and soils. Valley soil types consist of well-drained clay loams, and the foothill soil types consist of well-drained to excessively-drained sandy loams.

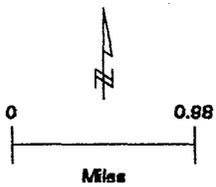
#### 3.4.21.4 Water Resources and Water Use

Jones Valley has a contract for the delivery of 190 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. CVP water is delivered to the contractor from Shasta Lake by the Shasta County Water Agency.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Shasta County Service Area No. 6-Jones Valley  
Figure 3-22



The lands that are identified in the encroachment and expansion areas have historically been supplied with groundwater prior to receiving CVP water. CVP water and groundwater are the Jones Valley's only source of water supply.

### 3.4.21.5 Groundwater Resources

Jones Valley uses CVP water exclusively on lands outside the authorized POU. Although the area was originally developed with local groundwater resources, the area does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

### 3.4.21.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by four vegetative community/habitat types. Table 3-39 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	473	446	919
Annual grassland	0	0	0	22	0	22
Mixed chaparral	0	0	0	155	47	202
Valley-foothill riparian/fresh emergent wetland	0	0	0	18	10	28
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>668</b>	<b>503</b>	<b>1,171</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 16 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, three species (the Shasta salamander, California red-legged frog, and bald eagle), are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.21.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, two sites have been recorded on lands outside the authorized POU. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites during M&I development.

### 3.4.22 Shasta County Service Area No. 25—Keswick

Shasta County Service Area No. 25—Keswick (Keswick), was known as the Keswick Community Services District when it entered into a long-term water service contract (No. 14-06-200-1307A) with Reclamation for CVP water delivery on September 16, 1964. The contract will expire December 31, 2009. The Keswick Community Services District was dissolved in December 1990, and was assumed by County Service Area No. 25—Keswick on February 19, 1991.

#### 3.4.22.1 General Description and Location

Keswick is located in Shasta County, northwest of the City of Redding, just west of the Sacramento River. The Keswick service area covers 5,299 acres. Of this total, about 3,635 acres are located outside the authorized POU. These lands are shown in Figure 3-23.

#### 3.4.22.2 Land Use and Land Use Policies

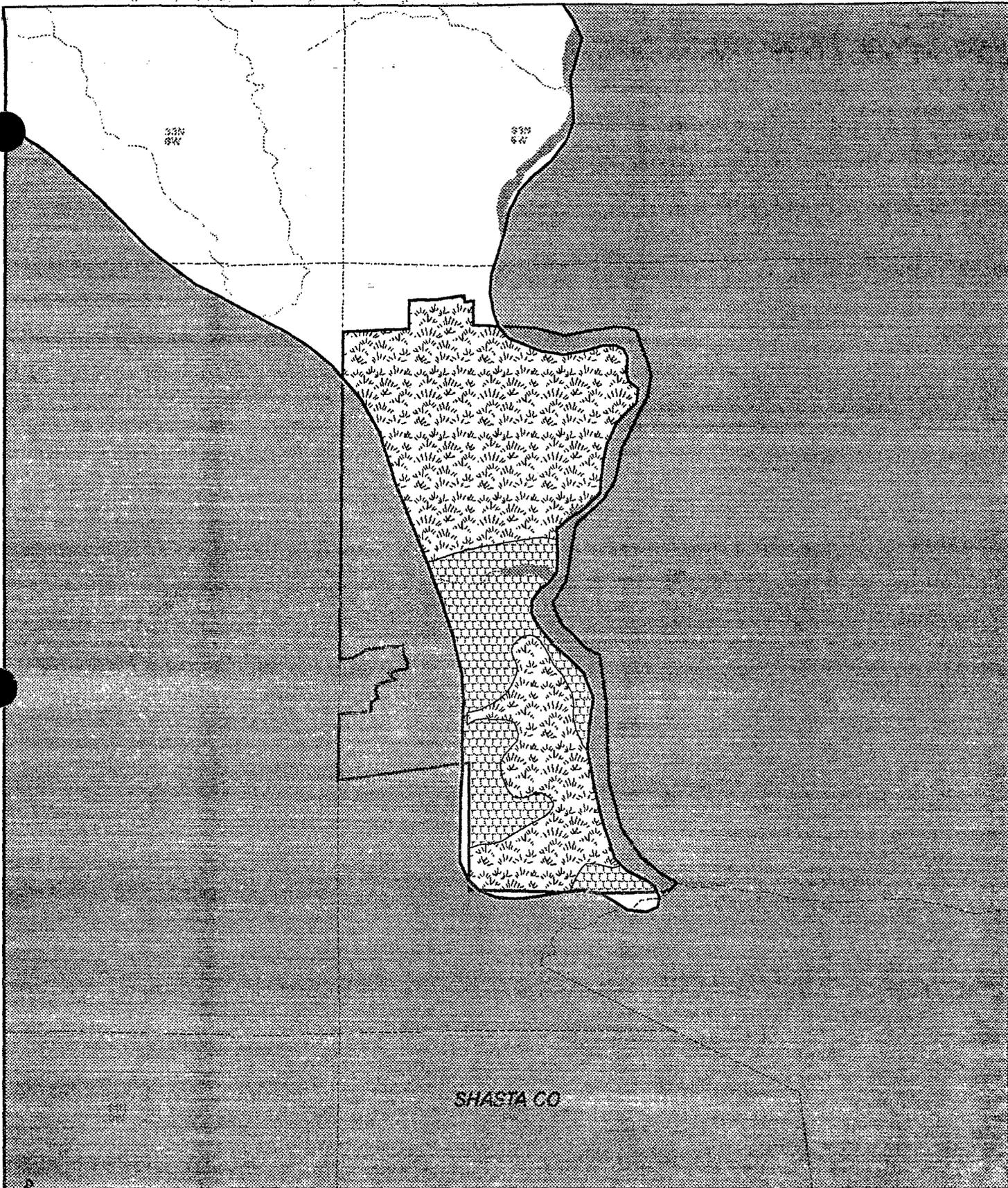
The Keswick service area is located within the unincorporated lands of Shasta County. The Shasta County General Plan designates these lands for rural residential, commercial, industrial, mineral resources, public lands, and open space uses.

The service area is primarily rural residential, with 2½-acre to 40-acre parcels. There are no plans for major development in the area.

Of the 3,635 acres located outside the authorized POU, 918 acres are encroachment lands and 2,717 acres are expansion lands. 918 acres correspond to a M&I land use and the remaining 2,717 acres are undeveloped and support native vegetation.

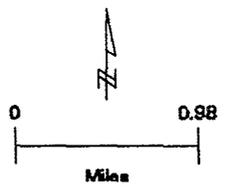
#### 3.4.22.3 Geology and Soils

Keswick is located in areas consisting of both foothill and mountain geologic formations. Soils in these areas range from metamorphosed volcanic rock and gravelly loams to coarse sands underlain by granitic rocks.



-  Existing Permitted Piece of Use
-  Irrigated CVP
-  Non-CVP Water Service
-  Municipal & Industrial CVP
-  Dryland Agriculture
-  Native Vegetation
-  Piece Of Use Boundary
-  Contract Service Area
-  Canals
-  County Boundary

Shasta County Service Area No. 25-Keswick  
Figure 3-23



### 3.4.22.4 Water Resources and Water Use

Keswick has a contract for the delivery of 500 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. CVP water is delivered to Keswick from the Spring Creek Power Conduit.

Prior to the introduction of CVP water supplies, the lands identified in the encroachment and expansion areas have historically been supplied with groundwater. Keswick has historically used as much as 182 acre-feet of water per year.

CVP water and groundwater are Keswick's only sources of water supply.

### 3.4.22.5 Groundwater Resources

Keswick uses CVP water exclusively on lands outside the authorized POU, and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

### 3.4.22.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-40 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	159	926	1,085
Valley-foothill riparian/fresh emergent wetland	0	0	0	6	53	59
Mixed chaparral	0	0	0	753	1,738	2,491
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>918</b>	<b>2,717</b>	<b>3,635</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 15 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior

to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, three species (the bald eagle, Shasta salamander, and California red-legged frog) are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### **3.4.22.7 Cultural Resources**

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, four small habitation/lithic scatter sites have been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites.

### **3.4.23 City of Shasta Lake**

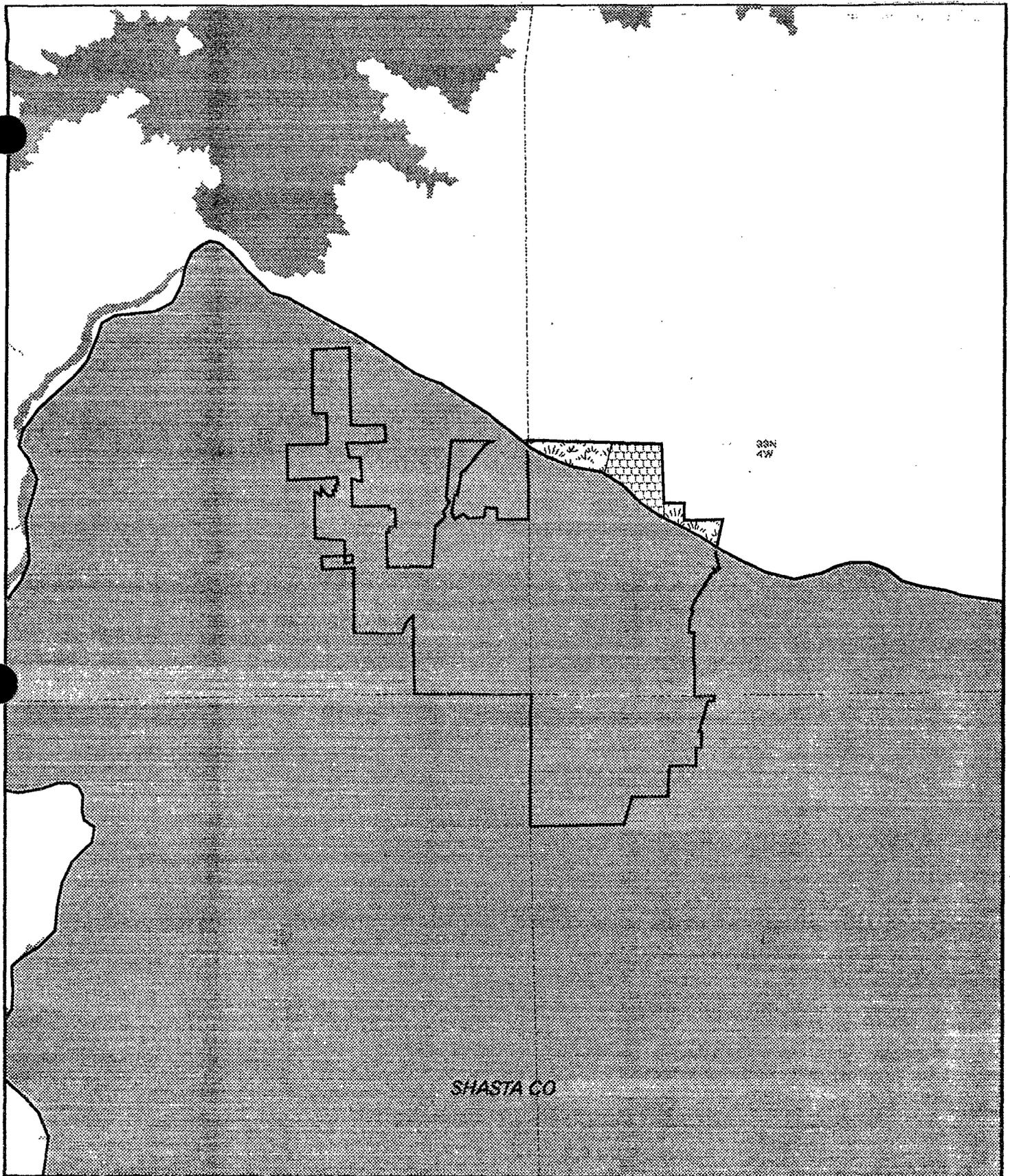
The City of Shasta Lake was known as the Shasta Dam Area Public Utility District when it entered into a long-term water service contract (No. IIR-1515) with Reclamation for CVP water delivery on August 12, 1948, and amended on September 15, 1955, and July 16, 1957. The Shasta Dam Area Public Utility District assumed the Summit City Public Utility District contract (No. IIR-1523, as amended on July 19, 1966, and modified by letter dated December 9, 1975). The Shasta Dam Area Public Utility District entered into temporary contracts (No. 8-07-20-W0715, dated August 22, 1988, which expired August 12, 1990; No. 0-07-20-W0885 dated September 19, 1990, which expired August 12, 1992; and No. 2-07-20-W1024, dated September 24, 1992, which expired February 28, 1994). The Shasta Dam Area Public Utility District was dissolved in July 1993, and contract No. 2-07-20-W1024 was assumed by the City of Shasta Lake. The City of Shasta Lake entered into interim renewal contract No. 4-07-20-W1134, dated March 3, 1994, which expired February 28, 1995. The contract was renewed for an interim period of 2 years effective February 28, 1995 (No. 4-07-20-W1134-IR2). Contract No. 4-07-20-W1134-IR3 was entered into on February 28, 1997, for a 1-year period.

#### **3.4.23.1 General Description and Location**

The City of Shasta Lake is located in Shasta County, north of the City of Redding. The City of Shasta Lake service area covers 6,979 acres. Of this total, about 231 acres are located outside the authorized POU. These lands are shown in Figure 3-24.

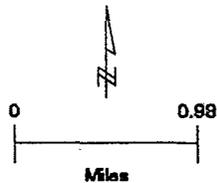
#### **3.4.23.2 Land Use and Land Use Policies**

The City of Shasta Lake service area is located within the incorporated and unincorporated lands of Shasta County. The City's and Shasta County's General Plans designate these lands for urban uses.



- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

City of Shasta Lake  
Figure 3-24



The lands that are identified in the encroachment and expansion areas have historically been supplied with groundwater prior to receiving CVP water. The area shown in the encroachment area has been using CVP water since the early 1950s. Since the distribution and storage facilities were constructed within the encroachment area in the 1950s, the land use has always been M&I. There is no agricultural use in the service area. Prior to receiving CVP water, the land was used for rangeland and grazing, and was irrigated with groundwater.

The City of Shasta Lake service area includes a lumber mill (Sierra Pacific) and several businesses, including markets and restaurants. The service area consists of primarily residential land uses.

Of the 231 acres located outside the authorized POU, 118 acres are encroachment lands and 113 acres are expansion lands. 118 acres correspond to a M&I land use, and the remaining 113 acres are undeveloped and support native vegetation.

#### **3.4.23.3 Geology and Soils**

The City of Shasta Lake is located on primarily foothill geologic formations and soils interspersed with alluvial and valley deposits. The foothill deposits consist of well-drained gravelly loams, and the valley deposits consist of moderately well-drained cobbly clay loams.

#### **3.4.23.4 Water Resources and Water Use**

The City of Shasta Lake has a contract for the delivery of 2,750 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. Project water is delivered to the City from Shasta Lake via the Toyon Pipeline.

Prior to the introduction of CVP water supplies, the 118 acres of M&I lands received water supplies from groundwater. The City of Shasta Lake has historically used as much as 2,488 acre-feet of water per year. CVP water and local groundwater are the City's only sources of water supply.

#### **3.4.23.5 Groundwater Resources**

Lands located outside the City of Shasta Lake have access to an unspecified amount of groundwater from private wells; however, the volume of available groundwater is limited. There is no indication that groundwater use would be limited by water quality issues.

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

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-41 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	0	0	71	71
Valley-foothill riparian/fresh emergent wetland	0	0	0	3	1	4
Annual grassland	0	0	0	115	41	156
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>118</b>	<b>113</b>	<b>231</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 15 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, two species (the Shasta salamander and California red-legged frog) are designated as threatened in accordance with the state Endangered Species Act.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.23.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, four sites have been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites.

#### 3.4.24 Silverthorn Summer Homes, Inc.

Silverthorn Summer Homes Inc. (SSH) entered into a long-term water service contract (No. PW-2) with Shasta County Water Agency (No. 14-06-200-3367A) on June 2, 1981. That contract will expire December 31, 2004.

#### 3.4.24.1 General Description and Location

SSH is located in Shasta County, north of the City of Redding along the southern shore of Shasta Lake. The SSH service area covers 55 acres. The entire service area is located outside the authorized POU. These lands are shown in Figure 3-25.

#### 3.4.24.2 Land Use and Land Use Policies

The SSH service area is located within unincorporated lands of Shasta County. The Shasta County General Plan designates these lands for rural residential uses. All of the 55 acres located outside the authorized POU are encroachment lands, in a rural residential land use.

The lands that are identified in the encroachment area have not been historically supplied with another source of water prior to receiving CVP water. The SSH service area is primarily rural residential, with 2½-acre to 40-acre parcels. There are no plans for major development in the area.

#### 3.4.24.3 Geology and Soils

SSH is located on foothill geologic formations and soils. The foothill deposits consist of well-drained gravelly loams.

#### 3.4.24.4 Water Resources and Water Use

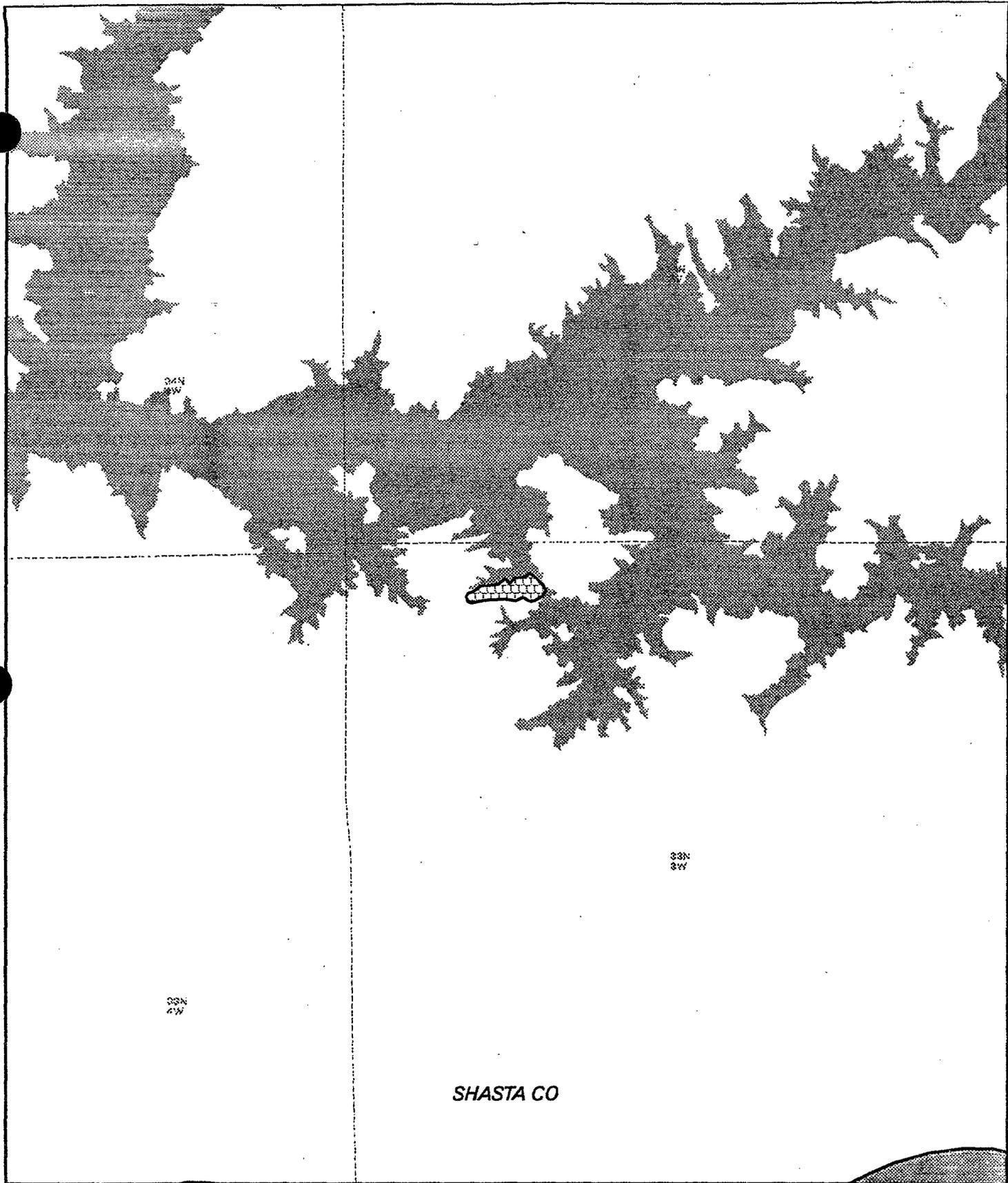
SSH has a contract for the delivery of 15 acre-feet of water. CVP water use is restricted to M&I purposes consistent with the CVP contract terms. CVP water is delivered to SSH from Shasta Lake by the Shasta County Water Agency.

Prior to the introduction of CVP water supplies, the 55 acres of land in the encroachment area did not receive water supplies from other sources. CVP water is SSH's only source of water supply.

#### 3.4.24.5 Groundwater Resources

SSH is located outside the authorized POU, and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

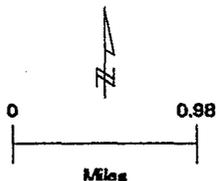
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SHASTA CO

- |  |                                 |   |                       |
|--|---------------------------------|---|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |   |                       |
|  | Dryland Agriculture             |   |                       |
|  | Native Vegetation               |   |                       |
|  | Place Of Use Boundary           |   |                       |

Silverthorn Summer Homes, Inc.  
Figure 3-25



C - 0 9 3 5 6 4

### 3.4.24.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by two vegetative community/habitat types. Table 3-42 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood-conifer	0	0	8	0	0	8
Mixed chaparral	0	0	47	0	0	47
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>0</b>	<b>55</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the four special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species listed in Table D-2, two species (the bald eagle and Shasta salamander) are designated as threatened and endangered in accordance with the state and federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

### 3.4.24.7 Cultural Resources

Based on a 1996 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded on lands outside the authorized POU. These lands were determined to have a low archaeological sensitivity with a low probability of encountering prehistoric sites.

## 3.4.25 Westlands Water District

Westlands Water District (Westlands) entered into a long-term water service contract (No. 14-06-200-495A) with Reclamation for CVP water delivery on June 5, 1963. In addition to the service contract, Westlands is entitled to receive an additional supply of CVP water pursuant to the judgement *Barcellos & Wolfsen, Inc. v. Westlands Water District* and

Westlands Water District v. United States entered on December 31, 1986. Westlands' total entitlement to CVP water is 1,150,000 acre-feet per year.

#### 3.4.25.1 General Description and Location

Westlands is located along I-5, primarily in Fresno County, with a portion of the district located in Kings County. The Westlands service area covers 605,548 acres. Of this total, about 49,401 acres are located outside the authorized POU. These lands are shown in Figure 3-26.

#### 3.4.25.2 Land Use and Land Use Policies

The Westlands service area is located within unincorporated lands of Fresno and Kings counties. The Fresno County General Plan designates these lands for general agriculture, rangeland, public facilities, mineral resources, and parks and recreation. The Kings County General Plan designates these lands for general agriculture and rangeland.

Of the 49,401 acres located outside the authorized POU, 36,419 acres are encroachment lands and 12,982 acres are expansion lands. 33 acres correspond to a M&I land use, 36,386 acres are in irrigated agricultural uses, 250 acres are dryland agricultural uses, and the remaining 12,732 acres are undeveloped and support native vegetation.

#### 3.4.25.3 Geology and Soils

Westlands is located in the southern San Joaquin Valley west of Fresno. The San Joaquin Valley is a structural trough bounded by the Coast Range on the west. The valley deposits consist of several thousand feet of Cenozoic sedimentary rocks and unconsolidated alluvium that reflect their geologic sources in the surrounding highlands and their fluvial and alluvial depositional environments.

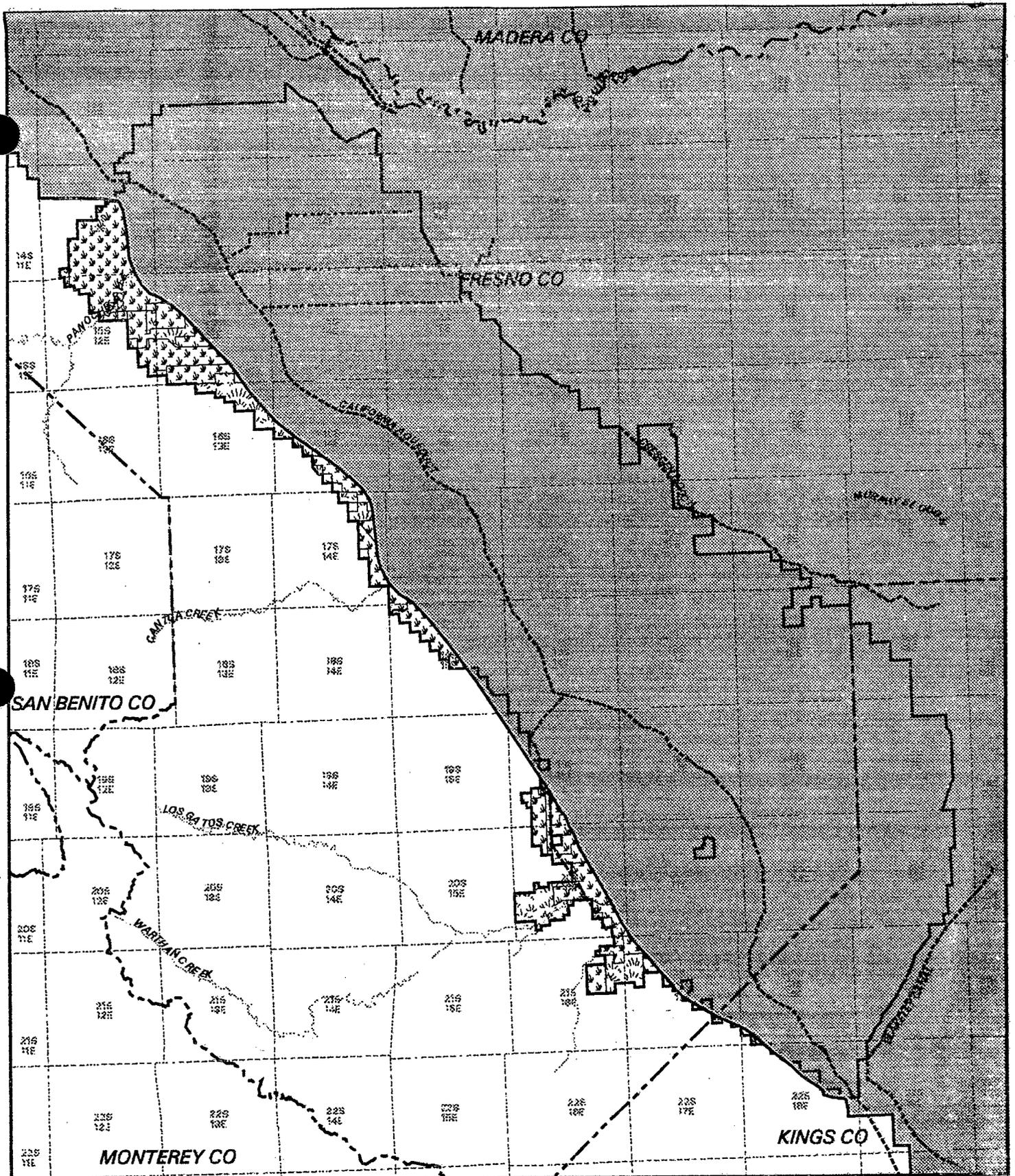
Eocene marine rocks, exposed in the Coast Range are the primary source of elevated selenium concentrations in soil, sediment, and groundwater in the San Joaquin Valley. Particulates and dissolved ions are transported to the valley floor by weathering and erosion of the mineral rich source rocks. Soils in the San Joaquin Valley with selenium concentrations above the median concentration for U.S. soils of 0.3 mg/kg (Shacklette et al., 1974) are adjacent to the Coast Range, where marine rocks are exposed (Gilliom et al., 1989).

Soils in Westlands are generally saline or sodic soils on the valley floor or on alluvial fans of the Coast Range foothills, and have selenium concentrations between 0.13 and 1.07 mg/kg (Tidball et al., 1986).

#### 3.4.25.4 Water Resources and Water Use

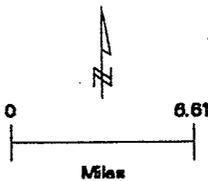
Westlands total entitlement to CVP water is 1,150,000 acre-feet per year. CVP water use is restricted to agricultural and M&I purposes consistent with the CVP contract terms.

Prior to the introduction of CVP water supplies, the 36,419 acres of agricultural and M&I lands encroached by CVP water did not receive water supplies from sources other than groundwater. Westlands has historically used as much as 1,441,000 acre-feet of water per year.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Westlands Water District  
Figure 3-26



### 3.4.25.5 Groundwater Resources

Westlands lands outside the authorized POU have access to an unspecified amount of groundwater from private wells as an alternative to CVP supplied water. The quantity of available water is limited, and past pumping has caused groundwater overdrafts to occur in Westlands.

Elevated selenium concentrations are found in some soils in Westlands (Tidball et al., 1986). These elevated selenium concentrations were found along the eastern boundary of the district. Subsurface drainage has been installed in many agricultural areas to flush selenium and other trace elements below the root zone (Gilliom et al., 1989); however, none of the lands outside the authorized POU are drained by such drainage systems. Generally, groundwater used for irrigation in Westlands is drawn from beneath the Corcoran clay layer and is of good quality.

### 3.4.25.6 Vegetation and Wildlife

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-43 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Alkali scrub	28,284	0	33	0	8,662	36,979
Valley-foothill riparian/ fresh emergent wetland	36	0	0	0	26	62
Annual grassland	8,066	0	0	0	4,294	12,360
<b>TOTAL</b>	<b>36,386</b>	<b>0</b>	<b>33</b>	<b>0</b>	<b>12,982</b>	<b>49,401</b>

<sup>a</sup>Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Kell, 1989).

Table D-1 lists vegetative and wildlife species commonly found in each of these community and habitat types. Table D-2 lists the 23 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Of the species in Table D-2, the species in Table 3-44 are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Table 3-44 Threatened and Endangered Species within Westlands Water District		
Habitat	Species	Status
Alkali scrub Annual grassland	California jewelflower	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin woolly-threads	State: -- Federal: Endangered
Alkali scrub	Blunt-nosed leopard lizard	State: Endangered Federal: Endangered
Annual grassland Fresh emergent wetland	Giant garter snake	State: Threatened Federal: Threatened
Alkali scrub	Fresno kangaroo rat	State: Endangered Federal: Endangered
Alkali scrub Annual grassland	San Joaquin antelope squirrel	State: Threatened Federal: Species of Concern
Alkali scrub Annual grassland	San Joaquin kit fox	State: Threatened Federal: Endangered
Species listed are in accordance with the state and federal Endangered Species Acts.		

Based on a review of the CNDDDB, the giant kangaroo rat, San Joaquin dune beetle, San Joaquin woolly-threads, panoche peppergrass, San Joaquin antelope squirrel, blunt-nosed leopard lizard, and San Joaquin pocket mouse have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.25.7 Cultural Resources

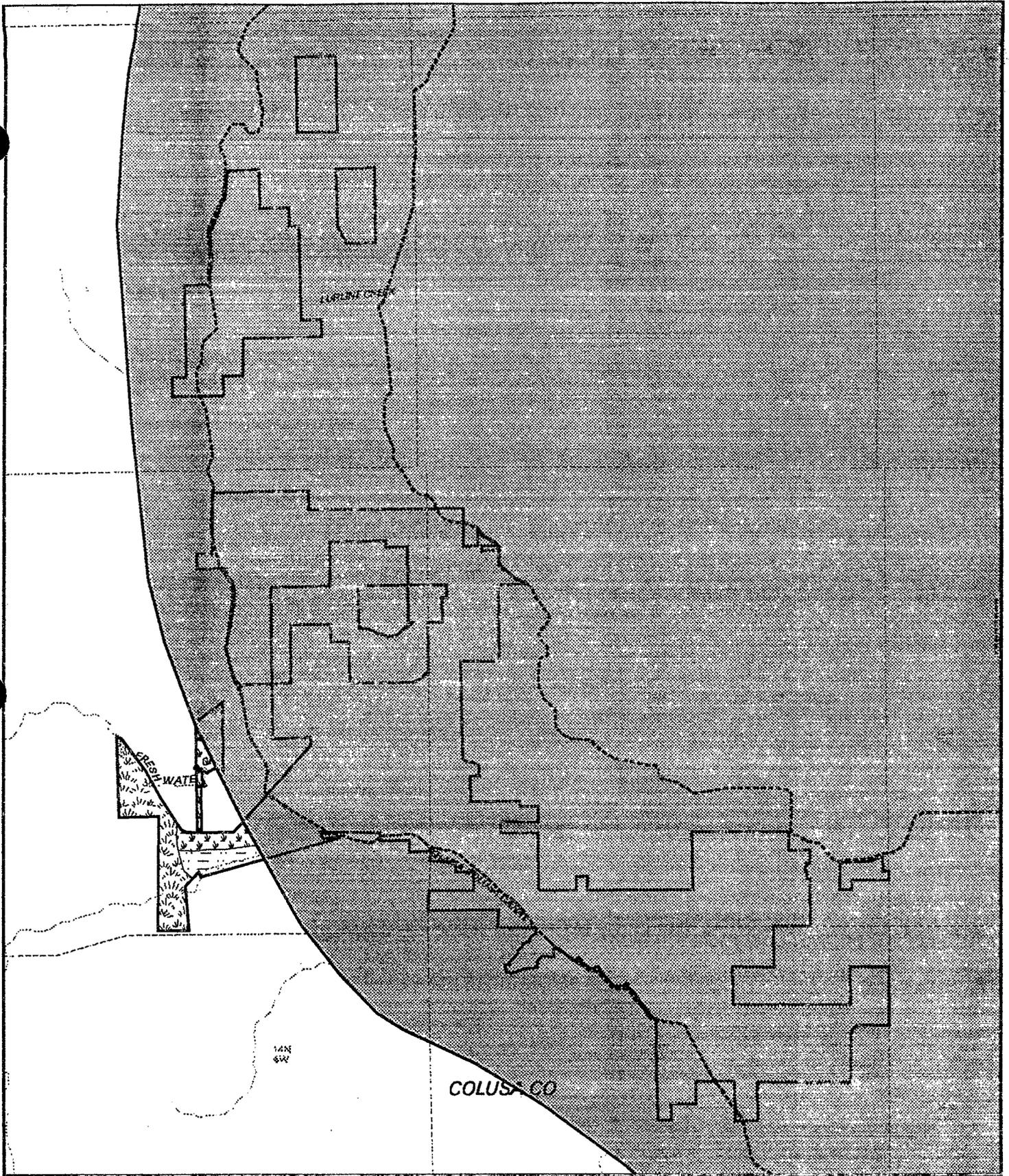
Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, no sites have been recorded. These lands were determined to have a moderate to high archaeological sensitivity with a moderate probability of encountering prehistoric sites and historic-era sites or features.

#### 3.4.26 Westside Water District

Westside Water District (Westside) entered into a long-term water service contract (No. 14-06-200-8222) with Reclamation for CVP water delivery on September 16, 1964. That contract expired on February 28, 1995. The contract was renewed for an interim period of 3 years effective March 1, 1995 (No. 14-06-200-8222-IR1).

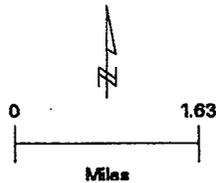
##### 3.4.26.1 General Description and Location

Westside is located in Colusa County in the southern portion of the Sacramento Valley. The Westside service area covers 17,479 acres. Of this total, about 997 acres are located outside the authorized POU. Lands within the CVP contract service area that are located outside the authorized POU are shown in Figure 3-27.



- |  |                                 |  |                       |
|--|---------------------------------|--|-----------------------|
|  | Existing Permitted Place of Use |  | Contract Service Area |
|  | Irrigated CVP                   |  | Canals                |
|  | Non-CVP Water Service           |  | County Boundary       |
|  | Municipal & Industrial CVP      |  |                       |
|  | Dryland Agriculture             |  |                       |
|  | Native Vegetation               |  |                       |
|  | Place Of Use Boundary           |  |                       |

Westside Water District  
Figure 3-27



#### **3.4.26.2 Land Use and Land Use Policies**

The Westside service area is located within the unincorporated lands of Colusa County. The County's General Plan designates these lands for primarily general agricultural, rangeland, mineral resources, and parks and recreation uses.

Of the 997 acres located outside the authorized POU, 239 acres are encroachment lands and 758 acres are expansion lands. 239 acres are in irrigated agricultural land use, 185 acres are in dryland agricultural use, and the remaining 573 acres are undeveloped and support native vegetation.

Westside records indicate that lands classified as irrigable have a history of cultivation. The remaining lands are classified as Class 6, non-irrigable lands.

#### **3.4.26.3 Geology and Soils**

Most of the soils of the valley floor are alluvial silt loams, clays, and sands formed from the sedimentary igneous and metamorphic rocks deposited by the Sacramento River and various side channels. The sedimentary deposits on the valley floor form some of Colusa County's prime agricultural soils; however, some sediments are poorly drained and pose limitations for agricultural crops (Sedway Cooke Associates, 1989).

#### **3.4.26.4 Water Resources and Water Use**

The contract provides for up to 25,000 acre-feet of CVP water. CVP water use is restricted to agricultural purposes consistent with the CVP water service contract terms. CVP water is Westside's only source of surface water supply.

#### **3.4.26.5 Groundwater Resources**

Westside uses CVP water exclusively on lands outside the authorized POU, and does not have alternative groundwater supply sources that could meet the water demand of existing and future uses on these lands.

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

Lands located outside the authorized POU either are currently or were historically occupied by three vegetative community/habitat types. Table 3-45 identifies each of these types and the corresponding acreage within the CVP contract service area that is located outside the authorized POU.

Table D-1 lists vegetative and wildlife species commonly found in these habitat types. Table D-2 lists the 18 special-status species, designated by federal and state resource agencies, that are expected to have been present on encroachment lands prior to development with irrigation water supplies and are expected to be present on expansion lands.

Habitat Type	Acres in Encroachment Area				Acres in Expansion Area	Total Acres
	CVP-Induced Agriculture	Non-CVP-Induced Agriculture	CVP-Induced M&I	Non-CVP-Induced M&I		
Valley-foothill hardwood	0	0	0	0	285	285
Valley-foothill riparian/fresh emergent wetland	0	1	0	0	9	10
Annual grassland	0	238	0	0	464	702
<b>TOTAL</b>	<b>0</b>	<b>239</b>	<b>0</b>	<b>0</b>	<b>758</b>	<b>997</b>

\*Vegetation types and habitat communities have been defined according to the Wildlife Habitat Relationships system (Holland and Keil, 1989).

Of the species listed in Table D-2, two species (the valley elderberry longhorn beetle and peregrine falcon) are designated as threatened or endangered in accordance with the state or federal Endangered Species Acts.

Based on a review of the CNDDDB, no special-status species have been observed on lands within the CVP contract service area outside the authorized POU.

#### 3.4.26.7 Cultural Resources

Based on a 1992 general cultural resources assessment that included a literature/archival search at the California Information Center, one site has been recorded. These lands were determined to have a high archaeological sensitivity with a high probability of encountering prehistoric sites.

# Effects of the Proposed Project and Alternatives

## 4.1 Introduction

This section addresses the potential environmental impacts of implementing the Proposed Project and alternatives, and addresses the environmental impacts that resulted from the historical delivery of CVP water to lands located outside the authorized POU. A large portion of the historical environmental impacts occurred from the late 1950s to late 1960s, prior to the establishment of statutes and regulations requiring compliance with CEQA and protection of endangered species, cultural resources, and other environmental resources. In addition, requirements for implementing mitigation measures to compensate for significant effects on these resources were not in place at the time many of the lands outside the authorized POU were encroached by CVP water supplies.

To the degree possible, historical changes to the environment that have occurred from introducing CVP water to lands located outside the authorized POU have been estimated. Pre-CVP water delivery land uses have been determined and compared with current land uses. This comparison allows a determination of the net change to the physical and biological environment that occurred with the introduction of CVP water to the encroached lands outside the authorized POU.

In locations where CVP water is currently delivered to M&I water users outside the authorized POU, it is not reasonable to assume that these land uses would be abandoned if the CVP water supply were to be terminated, as would be the case with Alternative. Because M&I uses required the permanent development of urban infrastructure and were accompanied by the settlement of human populations, it is assumed that alternative water could be obtained if CVP water could no longer be delivered to M&I lands outside the authorized POU. Therefore, it is assumed that no change to the physical environment would occur where M&I land uses are currently located if Alternative 1 were selected.

Because the Proposed Project and alternatives would delineate only the general area where CVP water could be delivered and the purposes for which it may be used, site-specific impacts resulting from future CVP water deliveries to expansion area lands cannot be estimated. To the degree possible, potential impacts to the lands and environmental resources within the CVP water contractor service areas are discussed; however, it is acknowledged that this discussion may be speculative.

Additional decisions by local land use authorities and the individual CVP water contractors would be needed prior to the delivery and future use of CVP water to expansion lands outside the authorized POU. Therefore, the actual places and purposes for which CVP water would be used is not known at this time, except as restricted by the individual water delivery contracts between Reclamation and the CVP water contractors.

## 4.2 Summary of Proposed Project Land Use and Habitat Impacts

The Proposed Project would expand the authorized POU boundary by about 834,667 acres. If CVP water is available to support irrigated agricultural or M&I land uses, then CVP water could be provided to (1) lands outside the authorized POU that currently receive CVP water (encroachment lands); (2) lands outside the authorized POU that receive water from other sources (expansion lands); and (3) dryland agriculture or undeveloped lands (expansion lands).

The availability of CVP water to these lands would not induce a land use change, but its availability could accommodate future planned land use changes.

The total acreage outside the authorized POU is 834,667 acres. Of this total, 116,664 acres are encroachment lands, classified as follows:

- 37,075 acres are CVP-induced agricultural lands
- 19,468 acres are non-CVP-induced agricultural lands
- 2,918 acres are CVP-induced M&I lands
- 57,203 acres are non-CVP-induced M&I lands

Of the remaining 718,003 acres of expansion lands, the Proposed Project would allow the delivery of CVP water to 21,678 acres of land located within 13 CVP water contractor service areas.

### 4.2.1 Comparison With Permitted Conditions

#### 4.2.1.1 Land Use Changes

The Proposed Project, when compared to permitted conditions, would allow the delivery of CVP water to a total of 142,762 acres of the 834,667 acres outside the authorized POU. This acreage consists of: (1) the 116,664 acres of land that have already been encroached, (2) about 21,678 acres of undeveloped lands that would be developed into irrigated agricultural uses and M&I uses (expansion lands), (3) about 399 acres of dryland agricultural lands, (4) about 2,107 acres of non-CVP supplied irrigated agricultural lands, and (5) about 1,914 acres of non-CVP supplied M&I lands.

#### 4.2.1.2 Habitat Changes

Of the total 834,667 acres located outside the authorized POU, 151,274 acres have been developed and would not be further affected by the proposed project. Of the 151,274 acres, 116,664 acres currently receive CVP water (60,121 acres receive CVP water for M&I uses and

56,543 acres for irrigated agriculture). The remaining 34,610 acres outside the authorized POU currently receive non-CVP water sources.

Of the 116,664 acres that currently receive CVP water, 67,072 acres were originally developed with non-CVP water. The development of the remaining 49,602 acres was facilitated by delivery of CVP water. The habitats of those 49,602 acres consisted of:

- 8 acres of valley-foothill hardwood-conifer
- 47 acres of mixed chaparral
- 198 acres of valley-foothill riparian/fresh emergent wetland
- 19,262 acres of annual grassland
- 29,918 acres of alkali scrub
- 169 acres of open water

Table 4-1 shows the water contractor service areas where these 49,602 acres are located, and the threatened and endangered species that are associated with those habitats.

Water Contractor Name	Habitats Affected		Species <sup>a</sup>	
	Habitat Type	No. of Acres		
Kanawha Water District	Annual Grassland	665	Western spadefoot Peregrine Falcon Northern Harrier Prairie Falcon Townsend's big-eared bat	Golden Eagle American badger Merlin Loggerhead Shrike Caper-fruited tropidocarpum
	Valley Foothill Riparian/ Fresh Emergent Wetland	24	Western pond turtle Peregrine Falcon Burrowing Owl Tricolored Blackbird American badger	Merlin Foothill yellow-legged frog Loggerhead Shrike Townsend's big-eared bat
Sacramento Municipal Utility District	Annual Grassland	2,772	Vernal pool fairy shrimp California linderiella California tiger salamander Prairie Falcon Short eared Owl Long-billed Curlew Townsend's big-eared bat Bogg's Lake hedge-hyssop	Vernal pool tadpole shrimp Western spadefoot Golden Eagle Burrowing Owl California Homed Lark Merlin Sacramento orcutt grass American badger
	Valley Foothill Riparian/ Fresh Emergent Wetland	58	California tiger salamander Western Spadefoot Northern Harrier Ferruginous Hawk Tricolored Blackbird Townsend's big-eared bat	Western Pond Turtle Giant garter snake Swainson's Hawk Merlin American badger

SECTION 4 EFFECTS OF THE PROPOSED PROJECT AND ALTERNATIVES

Table 4-1 Habitats Affected, and Associated Threatened and Endangered Species on Encroachment Lands				
Water Contractor Name	Habitats Affected		Species*	
	Habitat Type	No. of Acres		
San Luis Water District	Annual Grassland	7,928	California tiger salamander Hoover's eriastrum San Joaquin woolly-threads Townsend's big-eared bat Giant kangaroo rat	Recurved larkspur San Joaquin kit fox American badger Short-nosed kangaroo rat San Joaquin antelope squirrel
	Valley Foothill Riparian/ Fresh Emergent Wetland	80	Foothill yellow-legged frog Townsend's big-eared bat	American badger California tiger salamander
	Alkali Scrub	1,601	Giant garter snake Prairie Falcon Tricolored Blackbird San Joaquin antelope squirrel Fresno kangaroo rat Townsend's big-eared bat Recurved larkspur Hispid bird's beak	Golden Eagle Burrowing Owl Tulare grasshopper mouse Giant kangaroo rat Short-nosed kangaroo rat Heartscale Blunt-nosed leopard lizard Moestan blister beetle
Silverthorn Summer Homes, Inc.	Valley-foothill hardwood- conifer	8	Shasta salamander Golden Eagle	Bald Eagle
	Mixed chaparral	47	Blue-gray Gnatcatcher	
Westlands Water District	Annual Grassland	8,066	Morrison's blister beetle San Joaquin dune beetle Burrowing Owl San Joaquin antelope squirrel Fresno kangaroo rat San Joaquin pocket mouse American badger California jewelflower Recurved larkspur	Hoppings blister beetle Western spadefoot Northern Harrier Short-nosed kangaroo rat Giant kangaroo rat San Joaquin kit fox Townsend's big-eared bat San Joaquin woolly-threads
	Valley Foothill Riparian/ Fresh Emergent Wetland	36	Western spadefoot Giant garter snake Townsend's big-eared bat	Western pond turtle American badger Panoche peppergrass
	Alkali Scrub	28,317	Moestan blister beetle Blunt-nosed leopard lizard Tulare grasshopper mouse Panoche peppergrass	San Joaquin dune beetle Short-nosed kangaroo rat Recurved larkspur

\* Listed species include species designated by both State and Federal Endangered Species Acts

In addition to those lands outside the POU that currently receive CVP water (116,664 acres), about 21,678 acres of undeveloped land could be developed with implementation of the proposed project. Of this total, about 17,961 acres could be developed into M&I uses, and 3,717 acres could be developed into irrigated agricultural uses with the delivery of CVP water. These lands are located in 13 of the affected CVP water contractor services areas consisting of:

- Bella Vista Water District
- City of Coalinga
- Colusa County Water District
- El Dorado Irrigation District
- Glenn Valley Water District
- Kanawha Water District
- Mountain Gate Community Services District
- San Benito County Water District
- Santa Clara Valley Water District
- Shasta Community Services District
- Shasta County Service Area No. 25-Keswick
- City of Shasta Lake
- Westside Water District

Because the specific location of the 21,678 acres is not known, all of the habitat available in the expansion (undeveloped) area in these 13 CVP water contractor service areas could potentially be affected by the proposed project. The total amount of undeveloped acreage and habitat types found in these 13 CVP contractor service areas consist of 641,775 acres which are composed of:

- 757 acres of fresh emergent wetland
- 208,691 acres of annual grassland
- 0 acres of alkali scrub
- 140,337 acres of mixed chaparral
- 291,990 acres of valley-foothill hardwood

## 4.2.2 Comparison With Existing Conditions

### 4.2.2.1 Land Use Changes

Because CVP water deliveries have already encroached on 116,664 acres of lands outside the authorized POU, land uses have changed from those associated with permitted conditions. The Proposed Project, when compared to existing conditions, would allow the delivery of water to 211,678 acres of expansion lands. Of this 21,678 acres, 3,717 acres could be developed into CVP irrigated agricultural uses and 17,961 acres could be developed into CVP M&I uses located in the 13 CVP water contractor service areas previously mentioned. No other water contractors would be affected because of a lack of surplus water or absence of developable lands.

### 4.2.2.2 Habitat Changes

Of the total 834,667 acres located outside the authorized POU, 151,274 acres have been developed and would not be further affected by selecting the proposed project. The remaining 683,393 acres of undeveloped land where development could be facilitated with the delivery of CVP water (expansion area) are located within 19 of the 26 CVP water contractor service areas. Of these 19 CVP water contractors, only 13 have sufficient CVP water to allow future development on 641,775 acres of currently undeveloped lands. Based on estimates of current use of CVP water, the acreage that could be developed within those 13 CVP water contractor service areas is 21,678 acres.

The specific locations of the 21,678 acres within the 641,775 acres are not known. Because the locations are not known, all of the habitat shown in each of the 13 water contractor service areas could be affected by the proposed project. The amount of acreage and types of habitat are presented below:

- 757 acres of fresh emergent wetland
- 208,691 acres of annual grassland
- 0 acres of alkali scrub
- 140,337 acres of mixed chaparral
- 291,990 acres of valley-foothill hardwood

## 4.3 Effects on Water Use

Reclamation's petition and the three alternatives would not affect the volume of water specified to be appropriated in the existing water rights permits, nor would they affect the amount of CVP water currently contracted on a long-term basis by Reclamation to individual CVP water contractors.

Change 1 of Reclamation's petition would modify the various purposes of use currently authorized in each of the 16 water rights permits to conform with the 9 purposes listed in Table 3-4 of this EIR. Conforming the purposes of use would allow Reclamation to use water obtained in accordance with any of the 16 permits for any of the 9 purposes. This modification would not alter the volume of water appropriated, the volume of CVP water supplies currently contracted, or the location where CVP water supplies are used. Therefore, this change in and of itself would not result in a physical change to the environment that would constitute an adverse environmental impact.

Change 2 of Reclamation's petition would consolidate the authorized POU specified in each water right permit to allow each CVP source or facility to deliver water to locations consistent with the current integrated operations of the CVP. Reclamation's current operations allow water to be delivered from any source or facility to locations within the authorized POU where it is hydraulically possible to convey water. This modification would not alter the volume of water appropriated, the volume of CVP water supplies currently contracted, or the location where CVP water supplies are used. Therefore, this change in and of itself would not result in a physical change to the environment that would constitute an adverse environmental impact.

Change 3 of Reclamation's petition would expand the authorized POU to encompass all lands within the 26 CVP water contractor service areas. The following discussion addresses how each of the project alternatives would affect water use in relation to this change.

### 4.3.1 Water Use Changes Associated with the Proposed Project

Reclamation's petition would enable all 26 CVP water contractors with lands located outside the authorized POU to continue using their currently contracted CVP water. The total amount of CVP water contracted for delivery to the 26 CVP water contractors with implementation of the Proposed Project is about 2,328,675 acre-feet per year (Table 4-2).

## SECTION 4 EFFECTS OF THE PROPOSED PROJECT AND ALTERNATIVES

CVP Water Contractor	Purchased under Long-Term Contract (acre-feet)	Type of CVP Water Delivery Contract		Contracted CVP Water Able to be Delivered (acre-feet)			
		Municipal & Industrial	Agricultural	Proposed Project	No Project (Alt. 1)	Existing Conditions (Alt. 2)	Conformance and Consolidation (Alt. 3)
Anderson-Cottonwood Irrigation District	10,000		✓	10,000	10,000	10,000	10,000
Arvin-Edison Water Storage District	40,000	✓	✓	40,000	40,000	40,000	40,000
Avenal, City of	3,500	✓		3,500	3,500	3,500	3,500
Bella Vista Water District	24,000	✓	✓	24,000	24,000	24,000	24,000
Coalinga, City of	10,000	✓		10,000	10,000	10,000	10,000
Colusa County Water District	62,200		✓	62,200	62,200	62,200	62,200
Contra Costa Water District	195,000	✓		195,000	195,000	195,000	195,000
Coming Water District	25,300		✓	25,300	25,300	25,300	25,300
Del Puerto Water District	140,210	✓	✓	140,210	140,210	140,210	140,210
East Bay Municipal Utility District	150,000	✓		150,000	150,000	150,000	150,000
El Dorado Irrigation District	7,550	✓		7,550	0	7,550	0
Glenn Valley Water District	1,730		✓	1,730	1,730	1,730	1,730
Kanawha Water District	45,000	✓	✓	45,000	45,000	45,000	45,000
Mountain Gate Community Services District	350	✓		350	350	350	350
Orland-Artois Water District	53,000		✓	53,000	53,000	53,000	53,000
Sacramento Municipal Utility District	60,000	✓		60,000	0	60,000	0
San Benito County Water District	43,800	✓	✓	43,800	43,800	43,800	43,800
San Luis Water District	125,080	✓	✓	125,080	125,080	125,080	125,080
Santa Clara Valley Water District	152,500	✓	✓	152,500	152,500	152,500	152,500
Shasta Community Services District	1,000	✓		1,000	1,000	1,000	1,000
Shasta County Service Area No. 6— Jones Valley	190	✓		190	0	190	0
Shasta County Service Area No. 25— Keswick	500	✓		500	500	500	500
Shasta Lake, City of	2,750	✓		2,750	2,750	2,750	2,750
Silverthorn Summer Homes, Inc.	15	✓		15	0	15	0
Westlands Water District	1,150,000	✓	✓	1,150,000	1,150,000	1,150,000	1,150,000
Westside Water District	25,000		✓	25,000	25,000	25,000	25,000
<b>TOTAL</b>	<b>2,328,675</b>			<b>2,328,675</b>	<b>2,260,920</b>	<b>2,328,675</b>	<b>2,260,920</b>

Most of the CVP water contractors have put their maximum contracted CVP water supply to a beneficial use; only 13 CVP water contractors have not (Table 4-3). Therefore, for most of the CVP water contractors, no additional CVP water is available to accommodate

additional irrigated agriculture or M&I land uses within their service areas. For the CVP water contractors listed in Table 4-3, CVP water is available to accommodate future agricultural or M&I land use. Anticipated changes to land use associated with the availability of CVP water is discussed in Section 4.3 of this EIR.

Bella Vista Water District	San Benito County Water District
Coalinga, City of	Santa Clara Valley Water District
Colusa County Water District	Shasta Community Services District
El Dorado Irrigation District	Shasta County Service Area No. 25—Keswick
Glenn Valley Water District	Shasta Lake, City of
Kanawha Water District	Westside Water District
Mountain Gate Community Services District	

#### **4.3.2 Water Use Changes Associated with Alternative 1 (No Project)**

With implementation of Alternative 1, water contractors located outside the authorized POU would no longer be able to receive CVP water. Water contractors with lands inside and outside the authorized POU could continue to deliver CVP water only to lands within the authorized POU.

As a result of implementing Alternative 1, CVP water deliveries to EID, SMUD, Jones Valley, and SSH would be discontinued because these CVP water contractors are located entirely outside the authorized POU. Of these four CVP water contractors, SSH currently has no alternative source of water capable of meeting its current demand. Therefore, SSH would need to acquire water or its ongoing land uses would be jeopardized.

The volume of water contracted to these four CVP water contractors that would not be delivered equals about 67,755 acre-feet. These CVP water contractors would no longer be able to receive CVP water, and the 67,755 acre-feet of CVP water could be used for other beneficial uses, as determined by Reclamation. The amount of CVP water that could be delivered to the remaining 22 CVP water contractors that have lands within the authorized POU and could be applied to a beneficial use is about 2,260,920 acre-feet per year.

As noted previously in this EIR, it is assumed that the CVP water contractors that deliver water for M&I land uses would acquire water from other sources to serve the populations residing in those service areas. The alternative sources of water are not known; however, such water would be needed, regardless of cost, to support existing residential, commercial, and industrial land uses. Based on discussions with the CVP water contractors listed in

Table 4-4, no identified alternative onsite sources of water are capable of supporting existing land uses and activities for lands outside the authorized POU.

Coalinga, City of	Mountain Gate Community Services District
Colusa County Water District	San Luis Water District
Coming Water District	Shasta Community Services District
Del Puerto Water District	Silverthorn Summer Homes, Inc.
Glenn Valley Water District	Westlands Water District
Kanawha Water District	Westside Water District

Although these CVP contractors could potentially acquire non-CVP water through purchase or transfer from willing sellers to support existing and future land uses outside the authorized POU, this would constitute a separate action subject to a separate CEQA environmental review. Therefore, such action is not discussed in this document.

#### **4.3.3 Water Use Changes Associated with Alternative 2 (Existing Conditions)**

Alternative 2 would continue water delivery to CVP water contractor lands outside the authorized POU that currently receive CVP water. The volume of water that could be delivered under this alternative to the CVP water contractors is the current contracted amount of 2,328,675 acre-feet per year.

This alternative would allow continued CVP water delivery to agricultural and M&I land uses that currently receive CVP water. Only the lands within the CVP water contractor service area boundaries that do not currently receive CVP water would be prevented from future CVP deliveries.

#### **4.3.4 Water Use Changes Associated with Alternative 3 (Permit Consolidation and Conformance)**

Water use changes that would occur with implementation of Alternative 3 are the same as those for Alternative 1 (No Project). With implementation of Alternative 3, CVP water contractors would no longer be able to deliver CVP water to lands located outside the authorized POU. CVP water contractors with lands inside the authorized POU could continue to deliver CVP water to those lands.

As a result of implementing Alternative 3, CVP water deliveries to the four CVP water contractors located entirely outside the authorized POU (EID, SMUD, Jones Valley, and SSH) would be discontinued, and the associated volume of water contracted could be made available for other beneficial uses, as determined by Reclamation. The volume of water

associated with these CVP water contractors totals about 65,755 acre-feet. The amount of CVP water that could be delivered to the remaining 22 CVP water contractors that have lands within the authorized POU and could be applied to a beneficial use is about 2,260,920 acre-feet per year.

#### **4.3.5 Effects on River Flow and Reservoir Conditions Associated with the Proposed Project and Alternatives**

The Proposed Project and three alternatives would not significantly vary the volume of water delivered in accordance with existing CVP contracts. As a result, there would be no substantial change in river flow or reservoir conditions.

The Proposed Project and Alternative 2 (Existing Conditions) would allow the contracted volume of water (totaling 2,328,675 acre-feet per year) to be delivered to the CVP water contractors and, therefore, would not affect river flow or CVP reservoir levels.

Alternatives 1 and 3 would not allow delivery of CVP water to the four CVP water contractors located entirely outside the authorized POU. Therefore, about 67,755 acre-feet of CVP water would become available for other beneficial uses, including meeting other CVP water delivery obligations.

Alternatives 1 and 3 would have a minor effect on flows of the American River, Folsom Lake, Sacramento River, and Shasta Lake. Because the 67,755 acre-feet of CVP water could be used for other purposes, it would have no discernible effect on Folsom Lake or Shasta Lake water elevations or operating conditions. Of the total 1,024,400 acre-feet typical maximum storage and 2,708,000 acre-feet average release from Folsom Lake, the volume of water affected by Alternatives 1 and 3 equal about 6.7 percent of Folsom Lake storage and 2.5 percent of releases. Both reservoir elevations may undergo minor seasonal changes in elevations; however, such changes cannot be accurately estimated at this time.

### **4.4 Effects on Land Use**

#### **4.4.1 Introduction**

Changes 1 and 2 would not affect the volume of water delivered or the place where water may be used in any of the 236 CVP water contractor service areas. Therefore, the following discussion addresses only acreage and land use activities outside the authorized POU that would be affected by implementing Change 3 (expanding the authorized POU to encompass CVP water contractor service areas).

The land uses within the CVP water contractor boundaries that could occur if the Proposed Project or three alternatives are implemented have been divided into four categories: irrigated agriculture, dryland agriculture, M&I uses, and undeveloped land (native vegetation). In this analysis, unirrigated pasture lands that have not been tilled recently have been classified as undeveloped.

The land use estimates in this section of the EIR consider whether there would be sufficient CVP water to support the land uses outside the authorized POU or whether local land management agencies would permit municipal, industrial, or agricultural activities on those lands. To calculate the land uses that could be served CVP water, the following assumptions were used:

- For either agricultural or M&I contracts, potential land uses would be consistent with contract terms. Therefore, only agricultural development would occur in areas with agricultural contracts, and only M&I development would occur in areas with M&I contracts.
- For combination agricultural and M&I water contracts, the future land uses that could occur with the Proposed Project were based on land use designations presented in applicable general plans having jurisdiction over the affected CVP water contractor lands.
- Future land use changes would occur only to the degree allowed with available CVP water not currently being used in other portions of the water contractor service area. Agricultural lands would be served between 0.8 and 6.5 acre-feet per acre of CVP water, depending on the historical water use rate and crops grown in each individual district. M&I lands would be served CVP water at an assumed rate of 2 acre-feet per acre unless district-specific information indicated otherwise. In several cases, information indicates M&I use rates ranging from 0.2 to 1.4 acre-feet per acre. These lower rates are typical of those water districts serving rural residential land uses, where single-family homes are located on large rural tracts of land 2 or more acres in size.

The acreages presented in the following text and in Appendix E were determined through several sources: (1) interviews with CVP water contractor personnel, which provided information on existing water sources, land use, and the availability of alternative water; (2) land use information developed by the Department of Water Resources (DWR), which provided parcel-specific land use descriptions for several districts; and (3) an aerial flyover and onsite reconnaissance surveys to verify ongoing land use practices on selected lands. If there were discrepancies between information sources, the information provided by the water contractors was used because their information was more recent and was compiled by onsite management personnel.

In developing the estimates of future land uses associated with the Proposed Project, several assumptions were made. These include:

- If the CVP water contractor historically had used its entire contract amount to support existing land uses, no additional agriculture or M&I development outside the authorized POU would occur.

- If the historical maximum CVP water use was less than the contracted amount, the difference could be used to support future agricultural or M&I development within or outside the authorized POU.
- If the CVP contractor currently irrigates less than a majority of its service area with CVP water, the available water (contracted volume minus historical maximum volume) would be used on lands located within the authorized POU.
- If the CVP contractor currently irrigates more than a majority of its service area with CVP water, the available water (contracted volume minus historical maximum volume) would be used on lands located outside the authorized POU.

#### 4.4.2 Land Use Changes Associated with the Proposed Project

The Proposed Project would expand the authorized POU boundary by about 834,667 acres to encompass all lands within the contracted service area boundaries of the 26 affected CVP water contractors. These water contractors would allow CVP water to be used for agricultural, municipal, and industrial purposes on (1) lands outside the authorized POU that currently receive CVP water (encroached lands); (2) lands outside the authorized POU that receive water from other sources; and (3) dryland agriculture or undeveloped lands (expansion lands), provided sufficient CVP water is available to support irrigated agricultural or M&I land uses.

The availability of CVP water to these lands would not induce a change to existing land use; however, its availability could accommodate future land uses that are planned by local land management agencies. Therefore, the acreage presented for the Proposed Project in the following discussion reflects the ultimate land uses that could occur if future land management decisions allow the change.

##### Comparison to Permitted Conditions

The Proposed Project would allow all 834,667 acres outside the authorized POU to receive CVP water. Because CVP water is limited, of this total, only 142,762 acres would be able to receive either agricultural or M&I CVP water. About 62,766 acres of agricultural land outside the authorized POU would be irrigated by CVP water. When compared to permitted conditions, the Proposed Project would allow CVP water to be delivered to 7,581 acres that were irrigated by non-CVP water, 51,468 acres that were dryland farmed, and 3,717 acres that previously were undeveloped.

In addition, the Proposed Project would provide CVP water to about 79,996 acres of M&I lands. When compared to permitted conditions, the Proposed Project would allow delivery of CVP water to 62,035 acres of M&I lands that previously were supported by non-CVP water and 17,961 acres that previously were undeveloped.

### Comparison to Existing Conditions

The Proposed Project would allow CVP water to be delivered to 62,766 acres of irrigated agricultural land. Of these lands, 56,543 acres currently are irrigated with CVP water, 2,107 acres currently are irrigated with non-CVP water, 399 acres are dryland farmed, and 3,717 acres are undeveloped.

Land uses within the service areas of several CVP water contractors would not be changed with implementation of the Proposed Project because the uses have already been developed with non-CVP water; the maximum volume of contracted CVP water currently is used to support existing land uses; existing land use restrictions prevent future development; or the available CVP water makes up only a minor proportion of the total water available to the district and, therefore, would not be sufficient to facilitate future development within the service areas.

In several cases, the Proposed Project would not facilitate altering land uses within the boundaries of the CVP water contractors. Within EBMUD, lands outside the authorized POU have been developed for M&I purposes with non-CVP water. The introduction of CVP water to this service area would not induce land use changes to these lands, but would substitute or augment the existing water supply. A similar condition is also found in Contra Costa. The lands located outside the authorized POU, although currently undeveloped, have been protected by the district as mitigation lands for the Los Vaqueros Water Quality and Resource Management Project. Therefore, the Proposed Project would not facilitate altering land uses on these district lands.

Within SMUD, no change in land use would occur. No additional water would be available to support further agricultural or M&I land uses on district-owned lands.

Therefore, for the three water contractors discussed above and the other 12 CVP water contractors with no alternative water source (Table 4-4), no additional land use changes would occur as a result of implementing the Proposed Project.

The Proposed Project would substitute and augment non-CVP water that facilitated historically irrigated agricultural and M&I development. In SCVWD and SBCWD, both irrigated agriculture and M&I development took place using non-CVP water. The Proposed Project would change the source of water to existing irrigated agricultural and M&I lands, as well as facilitate the use of CVP water on existing dryland farms and lands classified as native vegetation. In these two districts, the conversion of dryland agriculture and native vegetation would be expected to take place even if CVP water was not available. The CVP water that would be provided would make up only a small proportion of the total water available and would not facilitate land use changes that would most likely occur with the availability of non-CVP water.

#### 4.4.3 Land Use Changes Associated with Alternative 1 (No Project)

With implementation of Alternative 1, the authorized POU would not be expanded, and Reclamation would be prohibited from delivering CVP water to the 834,667 acres of land located outside the authorized POU. Accordingly, many land management activities and land uses that have relied on the delivery of CVP water may be jeopardized; however, the historic delivery of CVP water to areas outside the authorized POU cannot be construed as a vested right for the continued delivery of water.

##### Comparison to Existing Conditions

Alternative 1 would eliminate existing CVP water delivery to 56,543 acres of irrigated agriculture. Because several CVP water contractors have available alternative water, a total of about 32,366 acres of agricultural land could be irrigated by non-CVP water (an increase of 5,474 acres). An additional 51,069 acres of dryland agricultural could result.

Alternative 1 also would eliminate existing CVP water delivery to about 60,121 acres of M&I land uses. However, it is unreasonable to assume that the permanent infrastructure and human populations that reside in these areas would be abandoned because of eliminating CVP water. Alternative sources of water are assumed to be available, at an unknown cost, to continue to support these land uses. Therefore, the 60,121 acres of M&I use would require non-CVP water sources.

Although 22 of these CVP water contractors would continue to receive CVP water for lands within the authorized POU, CVP water would be eliminated completely from four CVP water contractors with service areas located entirely outside the authorized POU. These four water contractors would no longer be able to support current land use activities unless an alternative water supply is acquired.

Six water contractors have relied on CVP water to support irrigated agriculture on lands outside the authorized POU (Table 4-5). These lands (totaling about 50,069 acres) would revert to dryland agriculture or commercial agricultural production would be discontinued unless an alternative water supply is acquired. If CVP irrigated agriculture is discontinued and alternative water sources are not developed, these lands probably would assume the characteristics of undeveloped lands in the immediate vicinity—unless they were developed into residential or commercial land uses or dryland agriculture.

Four CVP water contractors have relied on CVP water to develop municipal, industrial, and rural residential uses outside the authorized POU (Table 4-5). These lands total about 1,674 acres. Other unproven water sources may be available, but it is assumed that these land uses developed because of CVP water availability. These water contractors would have to secure other water sources to meet local municipal water demand if Alternative 1 is implemented.

<b>CVP Water Contractor</b>	<b>Irrigated Ag. (Acres)<sup>a</sup></b>	<b>M&amp;I (Acres)<sup>a</sup></b>
Colusa County Water District	1,499	0
Corning Water District	1,647	0
Kanawha Water District	689	0
San Luis Water District	9,609	0
Shasta County Service Area No. 6—Jones Valley	0	668
Shasta County Service Area No. 25—Keswick	0	918
Silverthorn Summer Homes, Inc.	0	55
Westlands Water District	36,386	33
Westside Water District	239	0
<b>Total Acreage</b>	<b>50,069</b>	<b>1,674</b>
<sup>a</sup> Corresponds to acreage presented in the irrigated agriculture and M&I columns, respectively, of Alternative 2 in Table 4-4.		

#### 4.4.4 Land Use Changes Associated with Alternative 2 (Existing Conditions)

About 83,435 acres (10 percent) of the lands outside the authorized POU have been developed into irrigated agriculture. Of that total, about 56,543 acres currently use CVP water to provide irrigation. The remaining 26,892 acres use other sources of water. About 5,804 acres (0.7 percent) of the lands outside the authorized POU currently support dryland agriculture.

M&I land uses occur on about 62,035 acres (7.4 percent) of the lands outside the authorized POU. Of that total, about 59,338 acres use CVP water to support this land use, and the remaining 1,914 acres rely on other water sources. About 683,393 acres (82 percent) of the total lands remain in an undeveloped condition.

Implementation of Alternative 2 would result in the continued delivery of CVP water to these land uses, including delivering water to the four CVP water contractors that are located entirely outside the authorized POU (EID, SMUD, Jones Valley, and SSH).

#### **Comparison to Permitted Conditions**

When compared to permitted conditions, this alternative facilitated the increase of irrigated agriculture by about 51,069 acres. This alternative has not changed the amount dedicated to M&I land use, nor has it reduced the acreage of lands classified as native vegetation.

#### **4.4.5 Land Use Changes Associated with Alternative 3 (Permit Consolidation and Conformance)**

##### **Comparison to Permitted Conditions**

This alternative would have the same effects on land use as Alternative 1. Because no changes to the authorized POU would occur under this alternative, delivery of CVP water to lands outside the authorized POU would be terminated.

##### **Comparison to Existing Conditions**

As discussed in Section 4.4.3, terminating CVP water deliveries on the lands outside the authorized POU would eliminate CVP water delivery to lands located outside the authorized POU, including 56,543 acres currently receiving CVP water for irrigated agricultural lands and 60,121 acres of M&I land uses supported by CVP. Accordingly, many existing land management activities and land uses may require an alternative water source.

### **4.5 Effects on Terrestrial Biological Resources**

The potential effects of the Proposed Project and three alternatives on terrestrial biological resources were determined by assuming that changes to the existing water rights permits would result from the following actions:

- Continued delivery of CVP water to irrigated agricultural and M&I lands and the new delivery of CVP water to lands outside the authorized POU, to the degree CVP water is available, that are currently in dryland agriculture or native vegetation. This action would occur with implementation of the Proposed Project.
- Termination of delivery of CVP water to lands located outside the authorized POU that are currently being irrigated. This could result in the conversion of land use if no alternative water supply is available. This action would occur with implementation of Alternative 1 and Alternative 3.

- Continued delivery of CVP water to irrigated agricultural and M&I lands outside the authorized POU. This action would occur with implementation of Alternative 2.

#### 4.5.1 Effects of the Proposed Project

##### Comparison to Existing Conditions

Of the total 834,667 acres located outside the authorized POU, 151,274 acres have been developed and would not be further affected by adopting the Proposed Project. Lands that have been developed for agricultural or M&I purposes are discussed in Section 3.4. The impact associated with the historical and ongoing delivery of CVP water to these lands is discussed in Section 4.5.3.

Although each CVP water contractor could conceivably redistribute CVP water to support new development within its service area, it would not likely be redistributed if existing water users would not receive sufficient water to support existing land uses. Therefore, future new development would not likely occur within individual CVP water contractor service areas that do not have firm CVP water delivery contracts of sufficient quantity to support the demand of future land uses.

Although there are 683,393 acres of undeveloped lands located throughout 19 CVP water contractor service areas, 5 CVP water contractors do not have surplus water and 1 CVP water contractor has lands that cannot be developed. Therefore, 13 CVP water contractors (totaling 641,775 acres) have both land that could be developed and surplus CVP water.

Table 4-6 lists the 13 CVP water contractors and the acreage and types of existing vegetative communities that could be affected by irrigated agricultural or M&I development facilitated by CVP water if the Proposed Project is implemented. Based on estimates of current use of CVP water, about 21,678 acres of vegetation could be affected with implementation of the Proposed Project. However, the specific locations of the 21,678 acres within the 641,775 acres of vegetation are not known.

The alteration of these habitats could change their ability to support associated wildlife species and other terrestrial biological resources. This is particularly valid for lands located in large, closely associated tracts that are considered to be regionally important. In other areas where the lands consist of relatively small and isolated tracts, contain varied habitat quality, and are geographically dispersed, the impact on common wildlife species is considered nonsignificant.

Table D-1 in Appendix D lists the vegetation and wildlife species commonly found in, or associated with, each of the habitat types listed in Table 4-6. Although the Proposed Project would have an impact on individual vegetation and wildlife species found in these habitats, the Proposed Project would not jeopardize the long-term existence of regional populations or communities of these species.

CVP Water Contractor	Acres That Could be Developed by Proposed Project	Acreage of Habitat Potentially Affected by the Proposed Project				
		Fresh Emergent Wetland	Annual Grassland	Alkali Scrub	Mixed Chaparral	Valley-Foothill Hardwood
Bella Vista Water District	3	6	126		106	22
Coalinga, City of	1,631	639	63,293			
Colusa County Water District	210	7	571		3	67
El Dorado Irrigation District	1,275		3,234			1,849
Glenn Valley Water District	41		130			
Kanawha Water District	213	6	207			
Mountain Gate Community Services District	111	36	794		832	924
San Benito County Water District	150				150	
Santa Clara Valley Water District	15,717		139,986		137,473	287,860
Shasta Community Services District	51				35	16
Shasta County Service Area No. 25—Keswick	1,590	53			1,738	926
Shasta Lake, City of	113	1	41			71
Westside Water District	573	9	309			255
<b>TOTAL</b>	<b>21,678</b>	<b>757</b>	<b>208,691</b>	<b>0</b>	<b>140,337</b>	<b>291,990</b>

### Comparison to Permitted Conditions

Of the total 834,667 acres located outside the authorized POU, a total of 116,664 acres have already developed and currently receive CVP water supplies. Of these 116,664 acres, 60,121 acres receive CVP water for M&I purposes while 56,543 acres receive CVP water for irrigated agricultural purposes. The remaining 34,610 acres outside the POU that have been developed do not receive CVP water supplies.

Of the 116,664 acres that currently receive CVP water supplies, 67,062 acres were originally developed with non-CVP water sources. The development of the remaining 49,602 acres was facilitated with the availability of CVP water. Table 4-7 summarizes the acreage of habitats that have been encroached by the delivery of CVP water supplies.

Habitat Type	Acreage Affected by CVP Agricultural Water Delivery	Acreage Affected by CVP M&I Water Delivery
Valley-foothill hardwood-conifer	0	8
Mixed chaparral	0	47
Valley-foothill riparian/fresh emergent wetland	140	58
Annual grassland	16,659	2,603
Alkali scrub	29,885	33
Open water	0	169

The availability of CVP water supplies has altered habitats and their ability to support associated wildlife and vegetation species. Where this has occurred over larger tracts of land, this alteration could have adversely affected the regional importance of the habitat to support viable populations of such species. As shown in Table 4-7, larger tracts of grassland and alkali scrub habitat have been affected by the delivery of CVP water supplies.

In the case of SLWD, Westlands, and KWD, CVP water facilitated the development of 7,928 acres, 8,066 acres, and 665 acres of annual grassland habitats, respectively, into irrigated agricultural uses. CVP water supplies also facilitated the development 1,601 acres and 28,317 acres of alkali scrub habitat in SLWD and Westlands, respectively, into irrigated agricultural land uses. The development of these lands is considered a significant impact because of the regional importance these large tracts had on maintaining local populations of species specifically associated with them.

The availability of CVP water supplies also facilitated the development of 24 acres of riparian habitat in KWD, 80 acres in SLWD, and 36 acres in Westlands. Although these habitats are not considered to be large tracts of land, their loss is considered to be a significant impact because of their value to associated vegetation and wildlife species that are dependent on this habitat.

The availability of CVP water also facilitated the development of 8 acres of valley-foothill hardwood-conifer and 47 acres of mixed chaparral habitats in Silverthorn Summer Homes, Inc. This loss is considered significant because of the habitats' value to value to associated threatened and endangered species.

In addition, about 21,678 acres of undeveloped land could be developed with implementation of the proposed project when compared to permitted conditions. Of the 21,678 acres, 17,961 acres could be developed into CVP M&I uses and 3,717 acres could be developed into CVP irrigated agricultural uses. Table 4-6 identifies the habitats and corresponding acreage in the expansion area that could be affected with the Proposed Project.

The alteration of these habitats could change their ability to support associated wildlife species and other terrestrial biological resources. Large tracts of land that are able to support wildlife species are considered to be regionally important and could result in significant impacts on species. In areas that have relatively small and isolated tracts, contain varied habitat quality, and are geographically dispersed, the impact on common wildlife species is considered nonsignificant.

The encroachment of habitats for M&I purposes are not considered a significant impact because this type of development has previously undergone environmental review by local land management agencies that either determined that the alteration of such habitats was not significant or that there was suitable mitigation available to avoid, reduce, or otherwise minimize impacts to these habitats.

#### **4.5.2 Effects of Alternative 1 (No Project)**

##### **Comparison to Existing Conditions**

Alternative 1 would terminate the delivery of CVP water to lands outside the authorized POU. As a result, irrigated agricultural lands relying on CVP water would no longer receive it. It is expected that, where non-CVP water sources are available, these lands would continue to be irrigated. If no alternative water is available, however, the lands would convert to dryland agriculture or commercial agricultural practices would cease. The 56,543 acres of irrigated land outside the authorized POU currently receiving CVP water would no longer receive CVP water. About 32,336 acres would continue to be irrigated by non-CVP water (an increase of 5,474 acres). In addition, 51,069 acres of CVP-irrigated agriculture would revert to dryland agriculture.

Lands that would no longer receive irrigation water are assumed to be used for dryland agricultural purposes. However, some lands may not be suitable for such practices, depending on site-specific economic conditions, and commercial agricultural use may be abandoned. Such lands eventually would revert to a state exhibiting native vegetation characteristics. The time required to revert to a native state is unknown and depends on the type of vegetation in the area, seed sources, successional stages of the native vegetation, precipitation, and other factors such as future land disturbances and fire. The removal of the lands from continued CVP water delivery would not result in a significant impact to biological resources.

Under Alternative 1, about 60,121 acres of M&I land outside the authorized POU would no longer be able to receive CVP water. These land uses would not likely be abandoned. None of these lands would revert to their native condition, therefore, this alternative would not have a beneficial impact on the availability of wildlife habitat. Alternative water would need to be acquired to continue supporting existing M&I land uses; however, the availability or cost of such water supplies is not known.

### 4.5.3 Effects of Alternative 2 (Existing Conditions)

#### Comparison to Permitted Conditions

Alternative 2 would not induce any new impacts on vegetation and wildlife resources. No land use changes would occur with the implementation of this alternative. The delivery of CVP water has already facilitated changes to the land use on lands outside the authorized POU. As a result, the delivery of CVP water has facilitated changes to vegetation and wildlife habitats that historically were found on these lands.

Of the 56,543 acres currently receiving CVP water for irrigation, 37,075 acres of wildlife habitat were changed by CVP-induced agricultural development (Table 3-6). The habitats affected by the CVP-induced agricultural development include fresh emergent wetlands, annual grassland, and alkali scrub. The remaining 19,468 acres previously had been disturbed by non-CVP-induced agriculture.

In addition to the CVP water that was delivered for agricultural uses, CVP water induced the development of land for M&I land uses. Of the 60,121 acres currently receiving CVP water for M&I purposes, 2,918 acres previously were undisturbed prior to the availability of CVP M&I water (encroached lands) (Table 3-6), and 57,203 acres were disturbed by non-CVP induced M&I water sources.

The availability of CVP water supplies has altered habitats and their ability to support associated wildlife and vegetation species. Where this has occurred over larger tracts of land, this alteration could have adversely affected the regional importance of the habitat to support viable populations of such species. As shown in Table 4-7, larger tracts of grassland and alkali scrub habitat have been affected by the delivery of CVP water supplies.

In SLWD, Westlands, and KWD, CVP water facilitated the development of 7,928 acres, 8,066 acres, and 665 acres of annual grassland habitats, respectively, into irrigated agricultural uses. CVP water supplies also facilitated the development 1,601 acres and 28,284 acres of alkali scrub habitat in SLWD and Westlands into irrigated agricultural land uses. The development of these lands is considered a significant impact because of the regional importance these large tracts had on maintaining local populations of species specifically associated with them.

The availability of CVP water supplies also facilitated the development of 24 acres of riparian habitat in KWD, 80 acres in SLWD, and 36 acres in Westland. Although these habitats are not considered to be large tracts of land, their loss is considered to be a significant impact because of their value to associated vegetation and wildlife species that are dependent on this habitat.

#### 4.5.4 Effects of Alternative 3 (Permit Conformance and Consolidation)

##### Comparison to Existing Conditions

Alternative 3 would have similar impacts on biological resources as Alternative 1. Of the 56,543 acres of irrigated land outside the authorized POU currently receiving CVP water, about 32,366 acres would be irrigated by non-CVP water. These lands are located in Arvin-Edison, CCWD, OAWD, SBCWD, and SCVWD.

In a manner similar to Alternative 1, about 60,121 acres of M&I lands outside the authorized POU would no longer be able to receive CVP water. These land uses would not likely be abandoned. None of these lands would revert to their native condition, therefore, this alternative would not have a beneficial impact on the availability of wildlife habitat. Alternative water would need to be acquired to continue supporting existing M&I land uses; however, the availability or cost of such water supplies is not known.

##### Comparison to Permitted Conditions

Because Alternative 3 is identical to Alternative 1, no change in impacts to biological resources would occur with implementation of Alternative 3, when compared to Alternative 1.

The encroachment of habitats for M&I purposes are not considered a significant impact because this type of development has previously undergone environmental review by local land management agencies that either determined that the alteration of such habitats was not significant or that there was suitable mitigation available to avoid, reduce, or otherwise minimize impacts to these habitats.

#### 4.6 Effects on Special-Status Vegetation and Wildlife Species

All special-status species (Table D-2 in Appendix D) known or expected to occur within the boundaries of the 26 CVP water contractors, yet outside the authorized POU, were assessed to determine potential impacts of the Proposed Project and three alternatives. Land modifications associated with agricultural use disrupts the soil such that no special-status species are expected to survive. Likewise, the invertebrates that depend on native vegetation would probably be adversely affected.

The potential significance of adverse effects on special-status species is typically determined on the basis of (1) the availability of habitat similar to that being altered by conversion to another land use; (2) the size, quality, and isolation of habitat patches with respect to nearby areas being affected; and (3) the life history characteristics (e.g., home ranges; mobility; and specialized habitat needs, range, and population status) of the species being affected.

For the purposes of this EIR, if suitable habitat conditions were present in an area, the species of concern are assumed to inhabit the area. Site-specific surveys are needed to verify the presence of these species or the characteristics of local populations that would be affected by the Proposed Project and three alternatives. Impacts on special-status species are described for each alternative below.

#### **4.6.1 Effects of the Proposed Project**

##### **Comparison to Existing Conditions**

Of the total 834,667 acres located outside the authorized POU, 21,678 acres of undeveloped land would be developed with implementation of the proposed project when compared to existing conditions. Of the 21,678 acres, 17,961 acres would be developed into CVP M&I uses and 3,717 acres would be developed into CVP irrigated agricultural uses.

The alteration of these habitats could change their ability to support associated wildlife species and terrestrial vegetation. Large tracts of land that are able to support wildlife species are considered to be regionally important and could result in significant impacts on species. In areas that have relatively small and isolated tracts, contain varied habitat quality, and are geographically dispersed, the impact on wildlife species is considered nonsignificant.

##### **Comparison to Permitted Conditions**

When compared to permitted conditions, the undeveloped land that could be affected by the Proposed Project totals about 683,393 acres. Of this area, 661,715 acres would not be affected by the Proposed Project because of existing land use restrictions and the lack of available CVP water to individual CVP water contractors. Therefore, 21,678 acres of undeveloped land are subject to development that would be facilitated by the Proposed Project. Undeveloped lands potentially subject to future CVP-water-facilitated changes are located within 13 of the 26 CVP water contractors affected by Reclamation's petition (Table 4-6).

The alteration of 21,678 acres of wildlife habitat would constitute a substantial change in these lands' ability to support wildlife species and terrestrial vegetation. In particular, the special-status species listed in Table D-2 would be subject to potential habitat losses that may affect the continued existence of local populations.

The impact of these land use alterations on special management zones, such as riparian zones, wetlands, or special-status species, is considered potentially significant. The conversion of land to an agricultural or M&I land use could have a significant adverse impact on species inhabiting those habitat types. The magnitude of such impacts cannot be estimated at this time because site-specific studies would be required to determine precise habitat changes that may occur and their effects on associated wildlife populations.

#### 4.6.2 Effects of Alternative 1 (No Project)

As previously noted, existing M&I land uses would not likely be abandoned if CVP water delivery was discontinued to lands outside the authorized POU. Therefore, Alternative 1 would have no impact on special-status species occupying undeveloped lands outside the authorized POU.

##### Comparison to Existing Conditions

With implementation of this alternative, 51,069 acres currently irrigated by CVP water would revert to dryland agriculture. The majority of acreage change would occur in Westlands (36,386 acres) and SLWD (9,609 acres). The acreage in Westlands and SLWD that has been developed for agriculture consisted of annual grassland, alkali scrub, and fresh emergent wetland.

If these lands revert from their current land use to native habitats, adverse effects would occur to some common species, but effects would vary by agricultural use and native habitat type. Conversion of affected lands in these two districts is not considered a significant effect on common species. One special-status species (Swainson's hawk) may be adversely affected by converting agricultural lands in these areas to native habitats. Impacts of habitat conversion on the Swainson's hawk are considered significant because of the relatively large area of land that would be altered by this alternative. This species would be affected despite its large home range and mobility.

#### 4.6.3 Effects of Alternative 2 (Existing Conditions)

##### Comparison to Permitted Conditions

About 60,121 acres of native vegetation and habitats have been converted to M&I development from CVP water. This development has resulted in altering or eliminating the habitat value on these lands for various special-status species listed in Table D-2. This development may have contributed to the loss of these species' ability to sustain local populations. This change is considered a significant adverse impact.

Although some areas with native habitat have been developed, the intensity of development is not uniform and, therefore, the effects of conversion vary substantially. In more intensely developed portions of the M&I water contractors, most special-status species probably were affected in the immediate vicinity of the development.

About 36,386 acres of native habitat in Westlands and 689 acres in KWD have been converted to irrigated agriculture as a result of delivery of CVP water. This acreage most likely consisted of annual grassland, alkali scrub, and fresh emergent wetland. Significant adverse effects are expected to have occurred to several special-status species in these districts as a result of agricultural development (Table D-2).

#### 4.6.4 Effects of Alternative 3 (Permit Consolidation and Conformance)

##### Comparison to Existing Conditions

Alternative 3 would have similar impacts on special-status species as Alternative 1, when compared to Alternative 2. With implementation of this alternative, 51,069 acres currently irrigated by CVP water would revert to dryland agriculture. The majority of acreage change would occur in Westlands (36,386 acres) and SLWD (9,609 acres). The acreage in Westlands and SLWD that has been developed for agriculture consisted of annual grassland, alkali scrub, and fresh emergent wetland.

If these lands revert from their current land use to native habitats, adverse effects would occur to some common species, but effects would vary by agricultural use and native habitat type. Conversion of affected lands in these two districts is not considered a significant effect on common species. One special-status species (Swainson's hawk) may be adversely affected by converting agricultural lands in these areas to native habitats. Impacts of habitat conversion on the Swainson's hawk are considered significant because of the relatively large area of land that would be altered by this alternative. This species would be affected despite its large home range and mobility.

##### Comparison to Permitted Conditions

Alternative 3 would have similar impacts on special-status species as Alternative 1. With implementation of this alternative, 51,069 acres currently irrigated by CVP water would revert to dryland agriculture. The majority of acreage change would occur in Westlands (36,386 acres) and SLWD (9,609 acres). The acreage in Westlands and SLWD that has been developed for agriculture consisted of annual grassland, alkali scrub, and fresh emergency wetland.

If these lands revert from their current land use to native habitats, adverse effects would occur to some common species, but effects would vary by agricultural use and native habitat type. Conversion of affected lands in these two districts is not considered a significant effect on common species. One special-status species (Swainson's hawk) may be affected adversely by converting agricultural lands in these areas to native habitats.

Impacts of habitat conversion on the Swainson's hawk are considered significant because of the relatively large area of land that would be altered by this alternative. This species would be affected despite its large home range and mobility.

#### 4.7 Effects on Air Quality

No direct impact on air quality would occur from implementation of the Proposed Project or three alternatives. However, future land use changes that are expected to occur from adding lands that are currently outside the authorized POU into the authorized POU may induce air emissions that are potentially adverse.

To determine potential air quality impacts, changes in land use acreages associated with the proposed project and three alternatives were calculated based on acreages presented in Appendix E. When determining impacts on local air quality, we considered the following: (1) cultivating more irrigated agriculture and less dryland agriculture acreage could result in more dust emissions from farming operations, more airborne pesticide and fertilizer residues, and more smoke from field burning of selected crops because irrigated agriculture is more intensely and continuously cropped than dryland agriculture, and (2) additional lands dedicated to municipal and industrial uses within the 26 CVP water contractor service areas would likely result in an increase in population and an associated increase in air pollutant emissions. These two scenarios would result in a negative impact on local air quality.

Conversely, cultivating less irrigated agriculture and more dryland agricultural acreage results in less dust emissions from farming operations, less airborne pesticide and fertilizer residues, and less smoke from field burning of selected crops, and as such, this scenario is considered to result in a positive impact on local air quality.

The potential effects on air quality associated with changes in land use are discussed below by alternative.

#### 4.7.1 Effects of the Proposed Project

##### Comparison to Permitted Conditions

When compared to Alternative 1, the Proposed Project would allow CVP water to be delivered for agricultural purposes to 62,766 acres, consisting of 7,581 acres that were irrigated by non-CVP water sources, 51,468 acres that were dryland farmed, and 3,717 acres that were previously undeveloped. The Proposed Project would also allow the delivery of CVP water to 62,035 acres of M&I land that were supported by a non-CVP water source, and 17,961 acres of land that were previously undeveloped. These potential land use changes would result in about 21,678 fewer acres of undeveloped land.

The land use changes associated with the Proposed Project could result in a minor negative effect on local air quality within the Sacramento Valley, San Joaquin Valley, San Francisco Bay Area, Mountain Counties, and North Central Coast air basins. The impact on air quality is considered nonsignificant because of the relatively small number of acres of land that would change land use when compared to the number of acres within the five air basins. Land use changes within the following 16 CVP water contractor service areas contribute to the nonsignificant impact on air quality:

- Bella Vista Water District
- City of Coalinga
- Colusa County Water District
- Del Puerto Water District
- El Dorado Irrigation District
- Glenn Valley Water District

- Kanawha Water District
- Mountain Gate Community Services District
- San Benito County Water District
- San Luis Water District
- Santa Clara Valley Water District
- Shasta Community Services District
- Shasta County Service Area No. 25–Keswick
- City of Shasta Lake
- Westlands Water District
- Westside Water District

### Comparison to Existing Conditions

When compared to Alternative 2, the Proposed Project would allow CVP water to be delivered for agricultural purposes to 62,766 acres, consisting of 56,543 acres that are currently receiving CVP water, 2,107 acres that were irrigated by non-CVP water sources, 399 acres that were dryland farmed, and 3,717 acres that were previously undeveloped. The proposed project would also allow the delivery of CVP water to 1,914 acres of M&I land that were supported by a non-CVP water source, and 17,961 acres of land that were previously undeveloped. These potential land use changes would result in about 21,678 fewer acres of undeveloped land.

The land use changes associated with the proposed project could result in a minor negative effect on local air quality within the Sacramento Valley, San Joaquin Valley, San Francisco Bay Area, Mountain Counties, and North Central Coast air basins. The impact on air quality is considered nonsignificant because of the relatively small number of acres of land that would change land use when compared to the number of acres within the five air basins. Land use changes within the following 15 CVP water contractor service areas contribute to the nonsignificant impact on air quality:

- City of Avenal
- Bella Vista Water District
- City of Coalinga
- Colusa County Water District
- El Dorado Irrigation District
- Glenn Valley Water District
- Kanawha Water District
- Mountain Gate Community Services District
- San Benito County Water District
- Santa Clara Valley Water District
- Shasta Community Services District
- Shasta County Service Area No. 25–Keswick
- City of Shasta Lake
- Westside Water District

## 4.7.2 Effects of Alternative 1 (No Project)

### Comparison to Existing Conditions

When compared to Alternative 2, Alternative 1 would not allow CVP water delivery to acreage outside the authorized POU for either agricultural or municipal and industrial uses. This would result in a change in practices on 56,543 irrigated acres that are currently receiving CVP water (encroached lands), including an increase of 5,474 acres to be irrigated by non-CVP water sources, and an increase of 51,069 acres to be dryland farmed. In addition, 60,121 M&I acres that currently receive CVP water (encroached lands) would need to be served by non-CVP water supplies. No development on currently undeveloped land would occur with Alternative 1.

The land use changes associated with Alternative 1 could result in a minor positive effect on local air quality within the Sacramento Valley and San Joaquin Valley air basins. The impact on air quality is considered nonsignificant because of the relatively small number of acres of land that would change land use when compared to the number of acres within the two air basins. No impact on air quality is expected in the San Francisco Bay Area, North Central Coast, or Mountain Counties air basins because no change in land use within those basins is expected with implementation of Alternative 1. Land use changes within the following six CVP water contractor service areas contribute to the nonsignificant improvement in air quality:

- Corning Water District
- Del Puerto Water District
- Kanawha Water District
- San Luis Water District
- Westlands Water District
- Westside Water District

## 4.7.3 Effects of Alternative 2 (Existing Conditions)

### Comparison to Permitted Conditions

When compared to Alternative 1, Alternative 2 would allow CVP water to be delivered for agricultural purposes to 56,543 acres, consisting of 5,474 acres irrigated by non-CVP water sources and 51,069 acres of dryland farmed land. In addition, 60,121 M&I acres served by non-CVP water supplies would be served by CVP water if Alternative 2 were implemented. No development on currently undeveloped land would occur with Alternative 2.

The land use changes associated with Alternative 2 could result in a minor negative effect on local air quality within the Sacramento Valley and San Joaquin Valley air basins. The impact on air quality is considered nonsignificant because of the relatively small number of acres of land that would change land use when compared to the number of acres within the two air basins. No impact on air quality is expected in the San Francisco Bay Area, North Central Coast, or Mountain Counties air basins because no change in land use within those

basins is expected with implementation of Alternative 2. Land use changes within the following six CVP water contractor service areas contribute to the nonsignificant impact on air quality:

- Corning Water District
- Del Puerto Water District
- Kanawha Water District
- San Luis Water District
- Westlands Water District
- Westside Water District

#### 4.7.4 Effects of Alternative 3 (Permit Consolidation and Conformance)

##### Comparison to Permitted Conditions

Because land uses associated with Alternative 3 are identical to Alternative 1, there would be no difference in air quality between Alternative 1 and 3.

##### Comparison to Existing Conditions

When compared to Alternative 2, Alternative 3 would not allow CVP water delivery to acreage outside the authorized POU for either agricultural or municipal and industrial uses. This would result in a change in practices on 56,543 irrigated acres that are currently receiving CVP water (encroached lands), including an increase of 5,474 acres to be irrigated by non-CVP water sources, and an increase of 51,069 acres to be dryland farmed. In addition, 60,121 municipal and industrial acres that currently receive CVP water (encroached lands) would need to be served by non-CVP water supplies. No development on currently undeveloped land would occur with Alternative 3. This is the same effect as was described for Alternative 1.

Similar to that described for Alternative 1, the land use changes associated with Alternative 3 could result in a minor positive effect on local air quality within the Sacramento Valley and San Joaquin Valley air basins. The impact on air quality is considered nonsignificant because of the relatively small number of acres of land that would change land use when compared to the number of acres within the two air basins. No impact on air quality is expected in the San Francisco Bay Area, North Central Coast, or Mountain Counties air basins because no change in land use within those basins is expected with implementation of Alternative 3. Land use changes within the following six CVP water contractor service areas contribute to the nonsignificant improvement in air quality:

- Corning Water District
- Del Puerto Water District
- Kanawha Water District
- San Luis Water District
- Westlands Water District
- Westside Water District

## 4.8 Effects on Water Quality

The Proposed Project and three alternatives would not affect the volume of water available for delivery to each CVP water contractor, therefore, no changes to CVP operations or the amount of water that could be delivered are expected. As a result, no change to river flows or water quality would occur with the implementation of the Proposed Project or three alternatives.

### 4.8.1 Effects of the Proposed Project

#### Comparison to Permitted Conditions

When compared to Alternative 1, the Proposed Project would not change the total flow, season of flow, or temperature of flow in the Sacramento River, American River, Trinity River, or other human-made conveyance systems. Existing contracted water would be available to CVP water contractors to be used throughout their water contractor service areas, rather than being restricted to areas that are in the currently authorized POU (as would be required by Alternative 1). Therefore, no impact to the water quality of these water systems would occur with implementation of the Proposed Project when compared to Alternative 1.

The Proposed Project would allow four CVP water contractors located entirely outside the authorized POU to legally receive CVP water: EID, SMUD, Jones Valley, and SSH. This differs from Alternative 1, which would not allow any CVP water delivery to occur outside the currently authorized POU. CVP water delivered as a result of implementing the Proposed Project would support the land uses within these CVP water contractors' boundaries, and these land uses would produce agricultural and municipal wastewater that would be discharged to surface and groundwater bodies. The wastewater discharges that would be generated as a result of uses supported by CVP water are not expected to adversely affect the water quality of the Sacramento River, American River, Trinity River, or other human-made conveyance systems when compared to Alternative 1.

Except for these four CVP water contractors located entirely outside the authorized POU, the Proposed Project would not result in any additional changes to the volume of wastewater generated.

#### Comparison to Existing Conditions

Because CVP water is currently being delivered to CVP water contractors located outside the authorized POU, implementation of the Proposed Project would not change the total flow, season of flow, or temperature of flow in the Sacramento River, American River, Trinity River, or other human-made conveyance systems when compared to Alternative 2. Existing contracted water would continue to be available to CVP water contractors, similar to existing conditions. Therefore, no impact to the water quality of these water systems would occur with implementation of the Proposed Project when compared to Alternative 2.

The Proposed Project would allow four CVP water contractors located entirely outside the authorized POU to legally receive CVP water: EID, SMUD, Jones Valley, and SSH. Because these four water contractors currently receive CVP water outside the authorized POU, the delivery of CVP water to these four water contractors does not constitute a change from existing conditions. CVP water delivered as a result of implementing the Proposed Project would continue to support the land uses within these CVP water contractors' boundaries, and these land uses would continue to produce agricultural and municipal wastewater that would be discharged to surface and groundwater bodies. The wastewater discharges that would be generated as a result of uses supported by CVP water are not expected to adversely affect the water quality of the Sacramento River, American River, Trinity River, or other human-made conveyance systems beyond the effects (if any) that currently result from existing CVP water deliveries and associated land uses.

Except for these four CVP water contractors located entirely outside the authorized POU, the Proposed Project would not result in any additional changes to the volume of wastewater generated.

#### **4.8.2 Alternative 1 (No Project)**

##### **Comparison to Existing Conditions**

Although Alternative 1 would not allow the use of CVP water outside the authorized POU, it would not change the total flow, season of flow, or temperature of flows in the Sacramento River, American River, Trinity River, or other human-made conveyance systems. Alternative 1 would continue to allow existing contracted water to be available to CVP water contractors, for use within the currently authorized POU. Therefore, no impact to the water quality of these water systems would occur with implementation of Alternative 1 when compared to Alternative 2.

With implementation of Alternative 1, EID, SMUD, Jones Valley, and SSH would no longer be able to receive CVP water because their service areas are located entirely outside the authorized POU. Land uses within these four service areas that rely solely on CVP water would not continue unless other water sources are acquired. Land uses that have other water sources available would continue, unless restricted by the quantity and/or quality of these other water sources. If the land use continues, agricultural and municipal wastewater would be produced that would be discharged to surface and groundwater bodies. It is expected that M&I land uses would continue, but agricultural land uses may diminish in extent and/or water-intensive crops may be replaced with crops that require less irrigation. The wastewater discharges that would be generated are not expected to adversely affect the water quality of the Sacramento River, American River, Trinity River, or other human-made conveyance systems beyond the effects (if any) that result from Alternative 2. Except for these four CVP water contractors located entirely outside the authorized POU, Alternative 1 would not result in any additional changes to the volume of wastewater generated.

The CVP water that would have been available for use in these four CVP water contractor service areas would be allocated to other CVP water contractors or other beneficial uses

outside of the four service areas, as assigned by Reclamation's water rights permit. The delivery rates and uses that could occur are not known at this time and would depend on future needs and available supplies; therefore, the impact on water quality from allocating this water elsewhere is unknown.

#### **4.8.3 Effects of Alternative 2 (Existing Conditions)**

##### **Comparison to Permitted Conditions**

Implementation of Alternative 2 would not change the total flow, season of flow, or temperature of flow in the Sacramento River, American River, Trinity River, or other human-made conveyance systems when compared to Alternative 1. Existing contracted CVP water would continue to be available to CVP water contractors where it is currently delivered, instead of being restricted to use within the currently authorized POU. No adverse impact to the water quality of these water systems would occur with implementation of Alternative 2 beyond current conditions.

Alternative 2 would allow the discharge of agricultural and municipal wastewater to surface and groundwater bodies within EID, SMUD, Jones Valley, and SSH from land uses that are supported by CVP water. As discussed for Alternative 1, if the existing land uses continue in these four service areas (supplied by alternative water sources), it is likely that agricultural and M&I wastewater would be discharged to surface and groundwater bodies. Therefore, there is no difference in the wastewater discharges between existing conditions and permitted conditions. Similar to Alternative 1, Alternative 2 would not adversely affect the water quality of the Sacramento River, American River, Trinity River, or other human-made conveyance systems, and Alternative 2 would not result in any additional changes to the volume of wastewater generated.

#### **4.8.4 Effects of Alternative 3 (Permit Consolidation and Conformance)**

##### **Comparison to Permitted Conditions**

Because Alternative 3 is identical to Alternative 1, there would be no difference in water quality between Alternative 1 and 3.

##### **Comparison to Existing Conditions**

Alternative 3 would not change the total flow, season of flow, or temperature of flows in the Sacramento River, American River, Trinity River, or other human-made conveyance systems. Therefore, it would not affect the water quality of these water systems.

Similar to Alternative 1, implementation of Alternative 3 would eliminate CVP water delivery to EID, SMUD, Jones Valley, and SSH. Land uses within these four service areas that rely solely on CVP water would not continue unless other water sources are acquired. The CVP water that would have been available for use in these four CVP water contractor

service areas would be allocated to other CVP water contractors or other beneficial uses outside of the four service areas.

## 4.9 Effects on Groundwater Resources

The Proposed Project and three alternatives would not have a significant impact on groundwater resources in the groundwater basins of the Central Valley; however, there may be localized effects on groundwater in specific areas in the San Joaquin Valley, such as the cities of Avenal and Coalinga, which are considered potentially significant.

### 4.9.1 Effects of the Proposed Project

#### Comparison to Permitted Conditions

This alternative would annually increase the groundwater volume in the Redding Basin by about 0.005 percent. It would also annually increase the groundwater volume in the Sacramento Valley Basin by about 0.001 percent, and would annually increase the groundwater volume in the San Joaquin Valley Basin by about 0.002 percent. In addition, it would annually increase the groundwater volume in the eastern and southern San Francisco Bay Basin by about 0.016 percent. This is not a measurable impact on the basins' groundwater systems.

#### Comparison to Existing Conditions

This alternative would annually increase the groundwater volume in the Redding Basin by about 0.005 percent. It would also annually increase the groundwater volume in the Sacramento Valley Basin by about 0.0004 percent, and would annually increase the groundwater volume in the San Joaquin Valley Basin by about 0.00002 percent. In addition, it would annually increase the groundwater volume in the eastern and southern San Francisco Bay Basin by about 0.015 percent. This is not a measurable impact on the basins' groundwater systems.

### 4.9.2 Effects of Alternative 1 (No Project)

#### Comparison to Existing Conditions

This alternative would result in no annual change in the groundwater volume in the Redding and eastern and southern San Francisco Bay basins. It would annually decrease the groundwater volume in the Sacramento Valley Basin by about 0.0009 percent, and would annually decrease the groundwater volume in the San Joaquin Valley Basin by about 0.002 percent. This is not a measurable impact on the basins' groundwater systems.

Effects on the San Joaquin Valley Basin groundwater system in specific areas are considered potentially significant, e.g., in the San Luis Water District and Westlands Water District, where approximately 93 percent of this annual depletion would occur and where lowering

of the groundwater table is already occurring (Reynolds, 1990). In addition to depleting the local groundwater resources and possibly causing surface subsidence, growers may also be economically affected by increased pumping costs resulting from lower groundwater tables.

#### **4.9.3 Effects of Alternative 2 (Existing Conditions)**

##### **Comparison to Permitted Conditions**

This alternative would result in no annual change in the groundwater volume in the Redding and eastern and southern San Francisco Bay basins. It would annually increase the groundwater volume in the Sacramento Valley Basin by about 0.0009 percent, and would annually increase the groundwater volume in the San Joaquin Valley Basin by about 0.002 percent. This is not a measurable impact on the basins' groundwater systems.

#### **4.9.4 Effects of Alternative 3 (Permit Consolidation and Conformance)**

##### **Comparison to Permitted Conditions**

Alternative 3 would have similar impacts on groundwater as Alternative 1. This is considered a nonsignificant impact on the basins' groundwater systems.

##### **Comparison to Existing Conditions**

Similar to Alternative 1, this alternative would result in no annual change in the groundwater volume in the Redding and eastern and southern San Francisco Bay basins. It would annually decrease the groundwater volume in the Sacramento Valley Basin by about 0.0009 percent, and would annually decrease the groundwater volume in the San Joaquin Valley Basin by about 0.002 percent. This is not a measurable impact on the basins' groundwater systems.

Effects on the San Joaquin Valley Basin groundwater system in specific areas are considered potentially significant, e.g., in the San Luis Water District and Westlands Water District.

### **4.10 Effects on Fish Resources**

The Proposed Project and three alternatives would not affect the volume of water contracted for use by individual CVP water contractors, nor would they affect the total volume of water that Reclamation may use for beneficial purposes as assigned by its existing water rights permits. Therefore, no change to the operations of existing CVP facilities or associated surface water bodies would occur.

Because no change to CVP facility discharges, downstream flow rates, or associated water quality would occur, no new or project-induced adverse impact on fish resources in the

Sacramento River, American River, or San Joaquin River basins would occur. The following discussion addresses each of the river basins affected by Reclamation's petition.

#### 4.10.1 Effects of the Proposed Project

##### Comparison to Permitted Conditions and Existing Conditions

**Sacramento River.** The upper Sacramento River above Red Bluff is an area of particular concern for the threatened winter-run chinook salmon. Average temperatures during August, the key month for winter-run chinook success, would not change from permitted or existing conditions with the proposed project. Implementation of the Proposed Project would not cause further degradation of this species because no new significant flow or temperature changes are expected as a result of this alternative when compared to either permitted conditions or existing conditions.

Other Sacramento River species of concern, such as striped bass, sturgeon, shad, and steelhead trout, would likewise not be affected by implementation of the Proposed Project when compared to permitted conditions or existing conditions because there would be no new significant effects on flow or temperature.

There would be no maximum or minimum reservoir elevation changes for Shasta or Clair Engle reservoirs with implementation of the Proposed Project. As a result, there would be no new significant impacts on fisheries in the major CVP reservoirs when compared to either permitted conditions or existing conditions.

**American River.** Fall-run chinook salmon is a species of greatest concern in the American River Basin. As noted above, the Proposed Project would not change existing operations of CVP facilities, including Folsom Dam and Lake Natoma, therefore, no change to existing habitat for this species would occur. Specifically, spawning areas and critical habitat for fry lifestages would not be adversely affected with implementation of the Proposed Project. No change to water quality or water temperature would occur with the Proposed Project that would adversely affect fish resources. Therefore, no new impact on this fish species is expected with implementation of the Proposed Project when compared to either permitted conditions or existing conditions.

**Sacramento-San Joaquin Delta.** Flow, seasonality of flow, or input temperature in the Delta would not change significantly as a result of implementing the Proposed Project when compared to either permitted conditions or existing conditions. For example, maximum estimated flow reductions comparing the Proposed Project to permitted conditions would be approximately 1 to 2 percent in winter and spring months. As a result, the Proposed Project would have no significant effect on Delta fish species.

The lack of changes in flow and seasonal flow patterns in total Delta inflows when compared to permitted conditions or existing conditions indicate that the location of the estuarine null zone, which has been identified as important to Delta smelt and striped bass production, would not be affected by the Proposed Project. Steady-state salinity at all Delta

locations is projected to remain nearly constant among the Proposed Project and the three project alternatives.

#### **4.10.2 Effects of Alternative 1 (No Project)**

##### **Comparison to Existing Conditions**

**Sacramento River.** The water surface elevations of Shasta and Clair Engle reservoirs would not be significantly altered from existing conditions with implementation of Alternative 1 because no appreciable change in the discharge or inflow to the reservoirs would occur. Also, elevation and temperature exceedance data show no appreciable changes that are likely to affect fish resources. Appreciable additional drawdown of the reservoirs affecting in-lake habitat associated with Alternative 1 is not expected; as a consequence, lake water temperatures would not be affected. Therefore, Alternative 1, when compared to existing conditions, would not affect fish resources in these reservoirs.

Sacramento River flow and temperature would not change significantly as a result of implementing Alternative 1 when compared to existing conditions. As a result, there would be no new impact from this alternative on the various runs of chinook salmon in the upper Sacramento River. Steelhead, striped bass, sturgeon, and shad would be similarly unaffected by Alternative 1.

**American River.** No significant change in flow or temperature would occur in the American River as a result of implementing Alternative 1. Therefore, there would be no effect on the fish species of the American River from implementing this alternative.

**Sacramento-San Joaquin Delta.** Total Delta inflow and outflow are not expected to change from existing conditions with implementation of Alternative 1. Sacramento River inflow temperatures at Freeport were used to examine potential Delta temperature changes. Freeport temperatures are not projected to change from existing conditions (as estimated using 1922-1977 monthly average temperatures) as a result of implementing Alternative 1. Salinity changes are not expected to occur with Alternative 1. Therefore, Delta fish species would not be affected by implementing this alternative.

#### **4.10.3 Effects of Alternative 2 (Existing Conditions)**

##### **Comparison to Permitted Conditions**

Alternative 2 is not projected to change water quality, river flow, reservoir elevation, or temperature when compared to permitted conditions for any of the CVP facilities. As a result, implementing Alternative 2 would result in no impacts on fish species.

#### 4.10.4 Effects of Alternative 3 (Permit Consolidation and Conformance)

##### Comparison to Existing Conditions

Alternative 3 would have similar impacts on fish resources as Alternative 1.

**Sacramento River.** The water surface elevations of Shasta and Clair Engle reservoirs would not be significantly altered from existing conditions with implementation of Alternative 3 because no appreciable change in the discharge or inflow to the reservoirs would occur. Also, elevation and temperature exceedance data show no appreciable changes that are likely to affect fish resources. Appreciable additional drawdown of the reservoirs affecting in-lake habitat associated with Alternative 3 is not expected; as a consequence, lake water temperatures would not be affected. Therefore, Alternative 3, when compared to existing conditions, would not affect fish resources in these reservoirs.

Sacramento River flow and temperature would not change significantly as a result of implementing Alternative 3 when compared to existing conditions. As a result, there would be no impact from this alternative on the various runs of chinook salmon in the upper Sacramento River. Steelhead, striped bass, sturgeon, and shad would be similarly unaffected by Alternative 3.

**American River.** No significant change in flow or temperature would occur in the American River as a result of implementing Alternative 3. Therefore, there would be no effect on the fish species of the American River from implementing this alternative.

**Sacramento-San Joaquin Delta.** Total Delta inflow and outflow are not expected to change from existing conditions with implementation of Alternative 3. Sacramento River inflow temperatures at Freeport were used to examine potential Delta temperature changes. Freeport temperatures are not projected to change from existing conditions (as estimated using 1922-1977 monthly average temperatures) as a result of implementing Alternative 3. Salinity changes are not expected to occur with Alternative 3. Therefore, Delta fish species would not be affected by implementing this alternative.

#### 4.11 Effects on Cultural Resources

Effects on cultural resources include direct and indirect effects. Direct impacts on cultural resources from agricultural development or urban and industrial features, now a part of the landscape, are largely irreversible. Modifying the existing water rights permits to incorporate these lands into the authorized POU would not, therefore, result in new or additional effects to these resources. Indirect effects on cultural resources, such as increased exposure to vandalism from development, have also occurred because the identified sites within the boundaries of various CVP water contractors have been compromised.

With delivery of CVP water to lands outside the authorized POU, two types of land use changes have occurred that may have affected cultural resources: (1) previously

unirrigated farm lands have been converted to irrigated agriculture, and (2) various other lands have been changed to support urban and industrial development.

Conversion of unirrigated lands to irrigated agriculture varies with each CVP water contractor. A large portion of these lands had been disturbed by past agricultural practices prior to CVP water delivery, and some have been disturbed with application of CVP water. The establishment of urban and/or industrial land uses essentially precludes returning the land to an agricultural land use or native vegetation. Therefore, past land use impacts to cultural resources are unmitigable.

The potential effects on cultural resources that could occur or that have already occurred with each of the project alternatives are described below.

#### 4.11.1 Effects of the Proposed Project

##### Comparison to Existing Conditions

No impact on cultural resources is expected from the continued delivery of CVP water to lands used for agricultural activities. In addition, new or additional adverse impacts on cultural resources are not expected from the M&I development that has already occurred within the boundaries of the CVP water contractors.

Potential impacts on cultural resources associated with the Proposed Project would occur as a result of the delivery of CVP water and subsequent development of currently undeveloped lands into an irrigated agricultural or M&I land use. Thirteen of the 26 CVP water contractors have lands within this category. These 13 CVP water contractors and the size of the currently undeveloped land area that could be developed into irrigated agricultural or M&I land uses are presented in Table 4-8.

CVP Water Contractor	Undeveloped Lands (acres)
Bella Vista Water District	3
Coalinga, City of	1,631
Colusa County Water District	210
El Dorado Irrigation District	1,275
Glenn Valley Water District	41
Kanawha Water District	213
Mountain Gate Community Services District	111
San Benito County Water District	150
Santa Clara Valley Water District	15,717

<b>CVP Water Contractor</b>	<b>Undeveloped Lands (acres)</b>
Shasta Community Services District	51
Shasta County Service Area No. 25-Keswick	1,590
Shasta Lake, City of	113
Westside Water District	573
<b>Total Acreage</b>	<b>21,678</b>

Delivery of CVP water to these undeveloped lands has the potential to generate significant adverse effects on cultural resources. Lands within these CVP water contractor boundaries have the potential to contain significant cultural resources of limited distribution. Until site-specific identification of cultural resources within the boundaries of each CVP water contractor is conducted, it is assumed that significant impacts on cultural resources could occur associated with local proposals that could be served by the Proposed Project.

#### **4.11.2 Effects of Alternative 1 (No Project)**

##### **Comparison to Existing Conditions**

Any potential impacts to cultural resources from M&I expansion have already occurred. Alternative 1 would eliminate irrigation from about 56,543 acres of currently irrigated farmlands and return these lands to dryland agriculture or irrigated agriculture served water by non-CVP sources. No adverse effects to cultural resources are expected from this action because no new land disturbance would be introduced which could adversely affect cultural resources that may be present.

No undeveloped lands would convert to a M&I land use when comparing Alternative 1 to existing conditions.

#### **4.11.3 Effects of Alternative 2 (Existing Conditions)**

##### **Comparison to Permitted Conditions**

Six CVP water contractors have used CVP water in irrigated agricultural development of lands outside the authorized POU (Table 4-9). These lands would not have been developed into an irrigated agricultural land use without CVP water.

CVP Water Contractor	Acres
Corning Water District	1,647
Del Puerto Water District	1,000
Kanawha Water District	689
San Luis Water District	9,609
Westlands Water District	36,386
Westside Water District	239
<b>Total Acreage</b>	<b>49,570</b>

The conversion of a total of about 51,069 acres of dryland agricultural fields to irrigated agricultural fields (which includes the 49,570 acres in Table 4-9) has had no significant effect on cultural resources. The potential effects to cultural resources from either irrigated or dryland agriculture in these areas are considered equal of the irrigated agricultural land use action does not disturb previously undisturbed subsurface cultural materials. However, if irrigated agricultural practices do disturb previously undisturbed subsurface cultural materials, then the potential for impacts to occur exists.

No undeveloped lands would convert to a M&I land use from Alternative 2 when compared to Alternative 1. A total of 62,035 acres of M&I lands have resulted from Alternative 2 and would result from Alternative 1; the only difference between the two alternatives is the source of water. Such development on the 62,035 acres may have adversely affected cultural resources. No new or additional adverse effects on cultural resources would result with implementation of this alternative because such adverse effects have already taken place on these lands.

#### 4.11.4 Effects of Alternative 3 (Permit Consolidation and Conformance)

##### Comparison to Existing Conditions

Alternative 3 would have similar impacts on cultural resources as Alternative 1. Any potential impacts to cultural resources from M&I expansion have already occurred. Alternative 3 would eliminate irrigation from about 56,543 acres of currently irrigated farmlands and return these lands to dryland agriculture or irrigated agriculture served water by non-CVP sources. No adverse effects to cultural resources are expected from this action because no new land disturbance would be introduced which could adversely affect cultural resources that may be present.

No undeveloped lands would convert to a M&I land use when comparing Alternative 3 to existing conditions.

## 4.12 Effects on Local Land Use Policies

### 4.12.1 Effects of the Proposed Project

#### Comparison to Permitted Conditions and Existing Conditions

With implementation of the proposed project, no conflicts with existing land use designations would occur. The existing land uses on lands outside the authorized POU are consistent with the general plan designations. Relocating the authorized POU boundary so that it is coincident with the boundaries of the CVP water contractors would not conflict with existing general plan land use designations if the proposed use of land is a designated use in that area.

### 4.12.2 Effects of Alternative 1 (No Project)

#### Comparison to Existing Conditions

Seven of the 26 affected CVP water contractors receive CVP water to irrigate lands for agricultural purposes only. Five of the seven water contractors have no alternative source of water and would not have developed into agricultural land uses if CVP water not been available. These lands have an agriculture land use designation. Without CVP water, they would revert to dryland agriculture or discontinue agricultural production. The five CVP water contractors are:

- Colusa County Water District
- Corning Water District
- Del Puerto Water District
- Glenn Valley Water District
- Westside Water District

Dryland agriculture, grazing, open space, or recreation uses associated with implementation of Alternative 1 would be compatible with the land use designations of the lands of the agricultural CVP water contractors.

Five CVP water contractors have relied to some degree on CVP water to support development of municipal and rural residential lands outside the authorized POU. The five CVP water contractors are:

- City of Coalinga
- Mountain Gate Community Services District
- Shasta Community Services District
- Silverthorn Summer Homes, Inc.
- Westlands Water District

With adoption of Alternative 1, CVP water would no longer be delivered to these lands, and the water contractors would have to secure other sources of water to maintain existing service. Obtaining another source of water may be difficult or expensive; however, no change in land use is expected if Alternative 1 is implemented.

There is one CVP water contractor that has relied on CVP water to some degree to support development of industrial land use outside the authorized POU. Without CVP water, SMUD's Rancho Seco power generation facility (although not currently in operation) would require an alternative water source. Obtaining another source of water may be difficult or expensive; however, no change in land use is expected if Alternative 1 is implemented. The land could be developed as specified by its existing general plan land use designation (public/quasi public) and zoning (agriculture) with other types of uses, although this may not be preferable.

#### **4.12.3 Effects of Alternative 2 (Existing Conditions)**

##### **Comparison to Permitted Conditions**

Existing uses of lands outside the authorized POU in the 26 affected CVP water contractors are consistent with county land use designations; therefore, implementation of this alternative would not conflict with existing land use designation.

#### **4.12.4 Effects of Alternative 3 (Permit Consolidation and Conformance)**

##### **Comparison to Existing Conditions**

Alternative 3 would have similar impacts on local land use policies as Alternative 1. Seven of the 26 affected CVP water contractors receive CVP water to irrigate lands for agricultural purposes only. Five of the seven water contractors have no alternative source of water and would not have developed into agricultural land uses if CVP water had not been available.

These lands have an agriculture land use designation. Without CVP water, they would revert to dryland agriculture or discontinue agricultural production. The five CVP water contractors are:

- Colusa County Water District
- Corning Water District
- Del Puerto Water District
- Glenn Valley Water District
- Westside Water District

Dryland agriculture, grazing, open space, or recreation uses associated with implementation of Alternative 1 would be compatible with the land use designations of the lands of the agricultural CVP water contractors.

Five CVP water contractors have relied to some degree on CVP water to support development of municipal and rural residential lands outside the authorized POU. The five CVP water contractors are:

- City of Coalinga
- Mountain Gate Community Services District
- Shasta Community Services District
- Silverthorn Summer Homes, Inc.
- Westlands Water District

With adoption of Alternative 1, CVP water would no longer be delivered to these lands, and the water contractors would have to secure other sources of water to maintain existing service. Obtaining another source of water may be difficult or expensive; however, no change in land use is expected if Alternative 1 is implemented.

There is one CVP water contractor that has relied on CVP water to some degree to support development of industrial land use outside the authorized POU. Without CVP water, SMUD's Rancho Seco power generation facility (although not currently in operation) would require an alternative water source. Obtaining another source of water may be difficult or expensive; however, no change in land use is expected if Alternative 1 is implemented. The land could be developed as specified by its existing general plan land use designation (public/quasi public) and zoning (agriculture) with other types of uses, although this may not be preferable.

## **4.13 Effects on Recreation and Visual Resources**

### **4.13.1 Effects on Recreation Resources**

The Proposed Project or three alternatives would not significantly affect recreation resources on either developed parks or on undeveloped lands. Land use changes that could occur on undeveloped lands may alter recreational opportunities such as hiking, hunting, and other activities associated with open space if they are developed into agricultural or M&I land uses.

If developed into M&I land uses, local land management authorities would require the development of appropriate recreation facilities to serve the resident population, therefore, existing recreational resources would be converted from undeveloped open space forms of recreation to formal developed forms of recreation common to urban environments.

The conversion of undeveloped land to agriculture would not preclude recreational activities, and may promote hunting various game birds and other species. The replacement of one form of recreation with another, which may occur with future land use changes is not considered a significant adverse impact on local and regional recreation resources.

### 4.13.2 Effects on Visual Resources

The Proposed Project and three alternatives would not directly alter the aesthetic quality of the local environments, however, in areas where future land use changes take place, change to existing visual resources is expected. The specific future land uses that are implemented would create a visual landscape that is commensurate with future land use activities and the environment.

It would be speculative to conclude that changes to the visual landscape of specific areas would be either adverse or beneficial. Local land management authorities control visual quality through land use regulations and restrictions that can be applied to future land development proposals.

## 4.14 Economics

### 4.14.1 Introduction

This section addresses the economic effects of modifying the authorized POU for the delivery of CVP water to CVP contractors from the proposed project and Alternatives 1 and 2. Effects from Alternative 3 would be the same as for Alternative 1. For purposes of full disclosure, this EIR addresses effects to economic conditions, although CEQA does not require a discussion of this issue. The effects are quantified in terms of changes in the value of crop production, wage and salary earnings related to agriculture, and the number of jobs affected by these modifications. In addition, the implications of modifying the authorized POU for M&I water contractors are qualitatively discussed.

The discussion presents the economic consequences from both a qualitative and quantitative perspective, discussing the possible impacts of increasing or decreasing irrigation water available to individual growers, and subsequently estimating the gross farm income, earnings, and employment impacts on the regional economy. The analysis distinguishes between direct farm-level benefits (and costs) felt by individual growers as a result of implementing an alternative and those indirect benefits that accrue to the regional economy when considering other industries in the Central Valley.

The Proposed Project would result in the expansion of irrigated acreage within the CVP service area. Compared to Alternative 1, this would result in a potential crop output increase of about \$51.8 million, a wage earnings increase of about \$24.4 million, and job growth of approximately 1,977. Compared to Alternative 2, the Proposed Project would increase crop receipts by \$3.8 million, earnings by \$1.5 million, and jobs by 153.

Alternative 1 would reduce farm receipts by about \$47.9 million, reduce wage earnings by over \$22.5 million, and reduce employment by about 1,825 jobs relative to Alternative 2. Although substantial, these dollar figures are small in relation to the total crop receipts generated over the entire CVP system and the state as a whole.

Alternative 2 would increase farm receipts by about \$47.9 million, increase wage earnings by over \$22.5 million, and increase employment by about 1,825 jobs relative to Alternative 1. Because Alternative 2 is existing conditions, these are increases that have occurred relative to Alternative 1 (permitted conditions).

The Proposed Project and alternatives do not involve changing the volume of contracted CVP water delivered to contractors, but rather changing the boundary of the authorized POU. If water is a limiting factor, economic gains (or losses) to growers in one area may be offset by losses (or gains) to growers elsewhere within the boundaries of an individual CVP contractor because the water will merely be reallocated to those in need. This analysis estimates the net change of irrigated lands expected to occur within the boundaries of each CVP water contractor assuming that water is not a limiting factor. It should be recognized that, even if water is not a limiting factor, the economic costs associated with loss of irrigated land may not occur if non-CVP water can be supplied to the unpermitted area. The analysis does not quantify economic effects resulting from changes to M&I land use.

Table 4-10 summarizes the results of the economic analysis. Net changes could represent relatively large economic impacts for individuals within these boundaries. However, it is not yet known whether displaced water would irrigate previously unirrigated acres within a water contractor boundary or replace another water source. Therefore, this section addresses impacts on individual growers in a qualitative manner rather than in terms of quantitative effects.

#### **4.14.2 Proposed Project**

##### **Farm-Level Effects**

Compared to Alternative 2, approximately 399 acres would change from dryland farming to irrigated production, and 3,717 acres would change from undeveloped land to irrigated agricultural production. Producers developing newly irrigated lands would incur costs above the delivery costs of CVP water because they would most likely need to install a farm-level irrigation system. Compared to Alternative 1, 51,468 acres would change from dryland to irrigated agricultural use, and 3,717 acres would change from undeveloped to irrigated agricultural use. Assuming CVP water was available to irrigate these acres, an increase in net farm income is expected. If CVP water is not available, gains in the unpermitted area may be offset by losses elsewhere.

##### **Regional Economic Effects**

Adoption of the Proposed Project would cause some regional economic changes. Compared to Alternative 2, it would increase the value of farm output about \$3.8 million in the unpermitted area of the CVP service area, produce about \$1.8 million in additional earnings, and add 153 full-time jobs in the CVP region. Over 74 percent of these benefits accrue to the SCVWD area; about 11 percent of the benefits would be felt in the Westside area.

CVP Water Contractor	Economic Effects of Implementing Alternative 1 (Permitted Conditions) Relative to Alternative 2 (Existing Conditions)		Economic Effects of Implementing Alternative 2 (Existing Conditions) Relative to Alternative 1 (Permitted Conditions)		Economic Effect of Implementing Proposed Project Relative to Alternative 1 (Permitted Conditions)	
	Cropping Pattern Changes	Regional Economic Consequences <sup>a</sup>	Cropping Pattern Changes	Regional Economic Consequences	Cropping Pattern Changes	Regional Economic Consequences
Anderson-Cottonwood Irrigation District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>b</sup>
Arvin-Edison Water Storage District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>b</sup>
Avenal, City of	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>bd</sup>
Bella Vista Water District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>bd</sup>
Coalinga, City of	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>bd</sup>
Colusa County Water District	1,499 fewer irrigated acres	Adverse impacts to region: GFI: (\$800,000) Earnings: (\$509,000) Employment: (41 FTE jobs)	1,499 additional irrigated acres	Benefit to CVP region: GFI: \$800,000 Earnings: \$509,000 Employment: 41 FTE jobs	1,709 additional irrigated acres	Benefit to CVP region: GFI: \$910,000 Earnings: \$581,000 Employment: 46 FTE jobs
Contra Costa Water District	None	None	None	None	None	None
Corning Water District	1,647 fewer irrigated acres	Adverse impacts to CVP region: GFI: (\$260,000) Earnings: (\$131,000) Employment: (10 FTE jobs)	1,647 additional irrigated acres	Benefit to CVP region: GFI: \$260,000 Earnings: \$131,000 Employment: 10 FTE jobs	1,647 additional irrigated acres	Benefit to CVP region: GFI: \$260,000 Earnings: \$131,000 Employment: 10 FTE jobs
Del Puerto Water District	1,000 fewer irrigated acres	Adverse impacts to CVP region: GFI: (\$1,990,000) Earnings: (\$960,000) Employment: (83 FTE jobs)	1,000 additional irrigated acres	Benefit to CVP region: GFI: \$1,990,000 Earnings: \$960,000 Employment: 83 FTE jobs	1,000 additional irrigated acres	Benefit to CVP region: GFI: \$1,990,000 Earnings: \$960,000 Employment: 83 FTE jobs
East Bay Municipal Utility District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>b</sup>
El Dorado Irrigation District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>b</sup>
Glenn Valley Water District	None	None	None	None	159 additional irrigated acres	Benefit to CVP region: GFI: \$70,000 Earnings: \$45,200 Employment: 4 FTE jobs
Kanawha Water District	689 fewer irrigated acres	Adverse impacts to CVP region: GFI: (\$240,000) Earnings: (\$150,000) Employment: (12 FTE jobs)	689 additional irrigated acres	Benefit to CVP region: GFI: \$240,000 Earnings: \$150,000 Employment: 12 FTE jobs	902 additional irrigated acres	Benefit to CVP region: GFI: \$320,000 Earnings: \$204,000 Employment: 17 FTE jobs
Mountain Gate Community Services District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>bd</sup>
Orland-Artois Water District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None
Sacramento Municipal Utility District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None <sup>b</sup>
San Benito County Water District	None	None <sup>b</sup>	None	None <sup>c</sup>	None	None
San Luis Water District	9,609 fewer irrigated acres	Adverse impacts to CVP region: GFI: (\$7,500,000) Earnings: (\$3,640,000) Employment: (303 FTE jobs)	9,609 additional irrigated acres	Benefit to CVP region: GFI: \$7,500,000 Earnings: \$3,640,000 Employment: 303 FTE jobs	9,609 additional irrigated acres	Benefit to CVP region: GFI: \$7,500,000 Earnings: \$3,640,000 Employment: 303 FTE jobs

Table 4-10

Economic Effects of Implementing the Alternatives		Economic Effects of Implementing Alternative 1 (Permitted Conditions) Relative to Alternative 2 (Existing Conditions)		Economic Effects of Implementing Alternative 2 (Permitted Conditions) Relative to Alternative 1 (Existing Conditions)		
Proposed Project Relative to Alternative 1 (Permitted Conditions)	Economic Effect of Implementing	Regional Economic		Regional Economic		
		Cropping Pattern Changes	Consequences	Cropping Pattern Changes	Consequences	
Proposed Project Relative to Alternative 1 (Permitted Conditions)	Economic Effect of Implementing	CVP Water Contractor	None	None	None	
		Santa Clara Valley Water District	None	None	None	
		Shasta Community Services District	None	None	None	
		Shasta County Service Area No. 6 - Jones Valley	None	None	None	
		Shasta County Service Area No. 25 - Keswick	None	None	None	
		Shasta Lake, City of	None	None	None	
		Silverthorn Summer Homes, Inc.	None	None	None	
		Westlands Water District	36,386 fewer irrigated acres	Adverse impacts to CVP region: (\$37,020,000) Earnings: (\$17,070,000) Employment: (1,370 FTE jobs)	36,386 additional irrigated acres	Benefit to CVP region: \$37,020,000 Earnings: \$17,070,000 Employment: 1,370 FTE jobs
		Westside Water District	239 fewer irrigated acres	Adverse impacts to CVP region: (\$140,000) Earnings: (\$85,000) Employment: (7 FTE jobs)	239 additional irrigated acres	Benefit to CVP region: \$140,000 Earnings: \$85,000 Employment: 7 FTE jobs
		Total	51,069 fewer irrigated acres	Adverse impacts to CVP region: (\$47,950,000) Earnings: (\$22,545,000) Employment: (1,825 FTE jobs)	51,069 additional irrigated acres	Benefit to CVP region: \$47,950,000 Earnings: \$22,545,000 Employment: 1,825 FTE jobs
		54,483 additional irrigated acres	Benefit to CVP region: \$51,510,000 Earnings: \$24,281,200 Employment: 1,977 FTE jobs			

\*Loss of estimated income would be partially offset by using CVP water elsewhere within the CVP service area.  
 \*Except that substitution to more expensive water supplies may increase water costs.  
 \*Except that less expensive CVP water supplies may decrease water costs.  
 \*Proposed growth would require more use of CVP water supplies. It is assumed that this growth would not occur under permitted conditions.

Table 4-11 summarizes the potential change in farm receipts associated with the proposed project relative to Alternative 1. In comparison to Alternative 1, the value of farm output would increase \$51.8 million, earnings would increase \$24.4 million, and employment would increase by 1,977 jobs. Most of these impacts (72 percent) would be obtained in Westlands, with SLWD receiving more than 14 percent.

<b>CVP Contractor</b>	<b>Alternative 1 Gross Farm Receipts</b>	<b>Proposed Project Gross Farm Receipts</b>	<b>Change in Receipts</b>	<b>Percent Change</b>
Anderson-Cottonwood Irrigation District	\$6,710,000	\$6,710,000	\$0	0.0
Arvin-Edison Water Storage District	\$217,490,000	\$217,490,000	\$0	0.0
Bella Vista Water District	\$340,000	\$340,000	\$0	0.0
Colusa County Water District	\$34,240,000	\$33,330,000	\$910,000	2.7
Corning Water District	\$4,200,000	\$3,940,000	\$260,000	6.6
Del Puerto Water District	\$85,210,000	\$83,220,000	\$1,990,000	2.4
Glenn Valley Water District	\$410,000	\$340,000	\$70,000	20.6
Kanawha Water District	\$5,220,000	\$4,900,000	\$320,000	6.5
San Benito County Water District	\$47,790,000	\$47,520,000	\$270,000	0.6
San Luis Water District	\$56,700,000	\$49,200,000	\$7,500,000	15.2
Santa Clara Valley Water District	\$5,160,000	\$2,300,000	\$2,860,000	124.3
Westlands Water District	\$710,680,000	\$673,660,000	\$37,020,000	5.5
Westside Water District	\$9,320,000	\$8,740,000	\$580,000	6.6
<b>Total</b>	<b>\$1,183,470,000</b>	<b>\$1,131,690,000</b>	<b>\$51,780,000</b>	<b>4.6</b>

#### **Potential Economic Effects on Municipal and Industrial CVP Contractors Associated with the Proposed Project and Alternatives**

M&I CVP water contractors affected by Reclamation's petition and alternatives include:

- Arvin-Edison Water Storage District
- City of Avenal
- City of Coalinga
- Contra Costa Water District
- East Bay Municipal Utility District
- El Dorado Irrigation District
- Mountain Gate Community Services District
- Sacramento Municipal Utility District
- San Benito County Water District
- San Luis Water District
- Santa Clara Valley Water District
- Shasta Community Services District
- Shasta County Service Area No. 6 - Jones Valley
- Shasta County Service Area No. 25 - Keswick
- City of Shasta Lake

- Silverthorn Summer Homes, Inc.
- Westlands Water District

The above CVP contractors serve varied needs, ranging from potable water for human consumption to cooling water for electrical power generation.

The economic effects of changing the availability of CVP water for these water contractors would vary depending on the alternative sources of water available to the water contractors. In the areas that have alternative water sources, the effect of conforming the authorized POU to Alternative 1 would likely be substantial, but less than the effect experienced in areas without alternative water sources. The areas without identified alternative water sources include the following:

- City of Coalinga
- Mountain Gate Community Services District
- Shasta Community Services District
- Silverthorn Summer Homes, Inc.
- Westlands Water District

For these CVP water contractors, the adverse economic effects associated with permitted conditions might be substantial. Water transfers or other new supplies would have to be developed.

#### 4.14.3 Effects of Alternative 1 (No Project)

##### Farm-Level Effects

Removal of CVP water supplies from irrigated lands outside the authorized POU would cause a net decrease in irrigated acreage. If water is not a limiting factor, about 51,069 acres would change from irrigated agricultural production to dryland farming. A decrease in net farm income in the unpermitted area and an uncertain, less-than-proportional increase in net farm income in the permitted area is expected. Economic impacts would depend on water year type, opportunities for irrigation development within the permitted area, water allocation rules, crop mix and quality within the unpermitted area, and other factors. However, the actual loss of investment stemming from both the district delivery and farm distribution systems is also uncertain and depends on site-specific conditions.

##### Regional Economic Effects

Implementing Alternative 1 would cause substantial regional economic changes if water is not a limiting factor. The value of gross farm income would decrease by about \$47.9 million in the unpermitted area. This translates to about \$22.6 million in lost earnings and 1,825 fewer full-time jobs in the CVP region. These impacts would be partially offset from income from using the CVP water elsewhere.

To give some perspective, the statewide gross crop value from CVP water sources during 1987 to 1989 was \$3.341 billion (USBR, 1989). The contractors cited in this analysis contributed slightly over \$1 billion to this total. A maximum decrease of \$47.9 million in value of farm output is approximately 1.4 percent of the state's agricultural output from CVP water sources. When considering all water sources (CVP, state, or local), this is less than 1 percent of the statewide value of farm output (U.S. Department of Commerce, Bureau of the Census, 1989).

In terms of cumulative impacts, which are discussed further in Section 6 of this EIR, this loss is not considered significant because it is only a small percentage of the state's earnings and jobs. However, the economic impact more significantly affects CVP water contractors that rely on CVP water for all or a large part of their agricultural uses.

Westlands would bear more than 75 percent of the total economic impact. The loss of 36,386 irrigated acres, or about 7 percent of the total irrigated acreage within its boundary, results in losses of nearly \$37 million in gross farm income, \$17 million in earnings, and more than 1,370 jobs in the CVP region. This would be a significant adverse impact to Westlands' overall earnings and jobs.

Some of these effects would be offset by use of the water no longer needed for irrigation of unpermitted lands elsewhere in the District. Westlands would continue to use its current contracted water more intensively within its current place of use boundary. More intensive water use could include growing more water-intensive crops such as alfalfa. If acreage is available, Westlands' irrigators may also decide to irrigate or develop additional irrigated lands within the permitted area and this would offset some of the negative effects discussed above. Regardless, there would most likely be a net decrease in irrigated acreage (especially in wet years), which could have a wide range of impacts on Westlands' regional economy; the lower end of the range is zero, or minimal impact, and the maximum impact has been cited above. Although switching crops and using water more intensively may mitigate some of the adverse impacts resulting from reducing overall irrigated acreage, the average impact to the regional economy might be substantial.

SLWD would bear about 15 percent of the total economic impact. If water is not a limiting factor, losses to gross farm income, earnings, and employment total approximately \$7.5 million, \$3.6 million, and 303 jobs, respectively. This impact affects 22 percent of SLWD's total irrigated acres and might constitute a substantial regional impact.

Similar to Westlands, it is unlikely that SLWD would have excess water resulting from limiting CVP water use to the place of use boundary. SLWD would also likely use water more intensively and, if available, irrigate or develop additional lands within the permitted area. However, it is also unlikely that it could maintain its current level of irrigated acreage and, as a result, the same range of regional impacts would result as those cited for Westlands.

The remaining contractors receive approximately 7 percent of the total economic impact. The impact on these contractors is relatively minor compared to the loss affecting

Westlands and SLWD. However, for some of these smaller contractors, the loss could be a significant portion of their income, earnings, and job losses, and may also be significant.

Table 4-12 identifies the affected CVP contractors and the percentage of loss that could occur to their entire district if Alternative 1 were adopted.

CVP Contractor	Alternative 1 Gross Farm Receipts	Alternative 2 Gross Farm Receipts	Change in Receipts <sup>a</sup>	Percent Change
Anderson-Cottonwood Irrigation District	\$6,710,000	\$6,710,000	\$0	0.0
Arvin-Edison Water Storage District	\$217,490,000	\$217,490,000	\$0	0.0
Bella Vista Water District	\$340,000	\$340,000	\$0	0.0
Colusa County Water District	\$33,330,000	\$34,130,000	(\$800,000)	-2.3
Corning Water District	\$3,940,000	\$4,200,000	(\$260,000)	-6.2
Del Puerto Water District	\$83,220,000	\$85,210,000	(\$1,990,000)	-2.3
Glenn Valley Water District	\$340,000	\$340,000	\$0	0.0
Kanawha Water District	\$4,900,000	\$5,140,000	(\$240,000)	-4.7
San Benito County Water District	\$47,520,000	\$47,520,000	\$0	0.0
San Luis Water District	\$49,200,000	\$56,700,000	(\$7,500,000)	-13.2
Santa Clara Valley Water District	\$2,300,000	\$2,300,000	\$0	0.0
Westlands Water District	\$673,660,000	\$710,680,000	(\$37,020,000)	-5.2
Westside Water District	\$8,740,000	\$8,880,000	(\$140,000)	-1.6
<b>Total</b>	<b>\$1,131,690,000</b>	<b>\$1,179,640,000</b>	<b>(\$47,950,000)</b>	<b>-4.1</b>

<sup>a</sup> Loss of estimated gross farm receipts would be partially offset by using CVP water elsewhere within the CVP service area.

From a statewide and CVP-region perspective, the loss of agricultural land within the boundaries of these contractors would not have a significant impact. But the effect on individual districts that have more than minor revenue/earnings and local employment reductions is considered significant. The loss would increase proportionately with the share of years in which water is not a limiting factor, and the amount of land that would be taken out of irrigated agricultural production.

#### 4.14.4 Effects of Alternative 2 (Existing Conditions)

##### Farm-Level Effects

Adoption of Alternative 2 would cause a net increase in irrigated acreage relative to Alternative 1. Overall, the land use of about 51,069 acres has changed from dryland farming to irrigated agricultural production. Assuming excess CVP water was available to irrigate these lands, an increase in net farm income in the unpermitted area has occurred. An uncertain, less-than-proportionate reduction of net farm income in the permitted area has occurred to the extent that excess supplies have not been available (water has been a limiting factor). The reduction of income is termed less than proportional because it is uncertain whether the lands within the permitted areas were converted to non-irrigated

uses or irrigated with water from another source. In either case, net farm income within the permitted area would drop, but the magnitude of the drop is unknown.

### Regional Economic Effects

Adoption of Alternative 2 would cause substantial regional economic changes. If water was not a limiting factor, it would increase the value of farm output about \$47.9 million, raise about \$22.5 million in additional earnings, and add 1,825 full-time jobs in the CVP region. Similar to Alternative 1, more than 75 percent of these benefits would accrue to the Westlands area, and about 15 percent of the benefits would accrue to the SLWD area.

Table 4-13 summarizes the potential change in farm receipts associated with Alternative 2.

CVP Contractor	Alternative 2 Gross Farm Receipts	Alternative 1 Gross Farm Receipts	Change in Receipts	Percent Change
Anderson-Cottonwood Irrigation District	\$6,710,000	\$6,710,000	\$0	0.0
Arvin-Edison Water Storage District	\$217,490,000	\$217,490,000	\$0	0.0
Bella Vista Water District	\$340,000	\$340,000	\$0	0.0
Colusa County Water District	\$34,130,000	\$33,330,000	\$800,000	2.4
Corning Water District	\$4,200,000	\$3,940,000	\$260,000	6.6
Del Puerto Water District	\$85,210,000	\$83,220,000	\$1,990,000	2.4
Glenn Valley Water District	\$340,000	\$340,000	\$0	0.0
Kanawha Water District	\$5,140,000	\$4,900,000	\$240,000	4.9
San Benito County Water District	\$47,520,000	\$47,520,000	\$0	0.0
San Luis Water District	\$56,700,000	\$49,200,000	\$7,500,000	15.2
Santa Clara Valley Water District	\$2,300,000	\$2,300,000	\$0	0.0
Westlands Water District	\$710,680,000	\$673,660,000	\$37,020,000	5.5
Westside Water District	\$8,880,000	\$8,740,000	\$140,000	1.6
<b>Total</b>	<b>\$1,179,640,000</b>	<b>\$1,131,690,000</b>	<b>\$47,950,000</b>	<b>4.2</b>

## SECTION 5

# Mitigation Measures

As discussed in Section 4 of this EIR, significant adverse environmental impacts to terrestrial biological resources have occurred as a result of delivering and using CVP on encroachment lands outside the authorized POU. In addition, additional significant adverse impacts could also occur, in the future, if the authorized POU is expanded to the boundaries proposed by Reclamation. Because these two categories of land involve an historical impact and a potential future impact, they would require different measures to mitigate associated adverse effects. Therefore, mitigation measures for each land category (encroachment vs expansion) are addressed separately in the following discussion.

## 5.1 Mitigation Needs for Impacts on Encroachment Lands

Section 4 of this EIR describes impacts from the delivery and use of CVP water on encroached lands. Of the 116,664 acres that currently receive CVP water (60,121 acres for M&I uses and 56,543 acres for irrigated agriculture), the development and land use conversion of 49,602 acres was facilitated by delivery of CVP water. The habitats of those 49,602 acres consisted of:

- 8 acres of valley-foothill hardwood-conifer
- 47 acres of mixed chaparral
- 198 acres of valley-foothill riparian/fresh emergent wetland
- 19,262 acres of annual grassland
- 29,918 acres of alkali scrub
- 169 acres of open water

Table 5-1 shows the water contractor service areas where these 49,602 acres of encroachment lands are located, the habitats affected by such encroachment, and the threatened and endangered species that are associated with those habitats.

These lands and associated habitats were directly affected by the delivery and use of CVP water. As concluded in Section 4, the impact to these habitats and associated wildlife species, designated as endangered or threatened in accordance with federal and state endangered species protection mandates, is considered a significant adverse impact.

Table 5-1 Habitats Affected and Associated Threatened and Endangered Species				
Water Contractor Name	Habitats Affected		Species	
	Habitat Type	No. of Acres		
Kanawha Water District	Annual Grassland	665	Western spadefoot Peregrine Falcon Northern Harrier Prairie Falcon Townsend's big-eared bat	Golden Eagle American badger Merlin Loggerhead Shrike Caper-fruited tropidocarpum
	Valley Foothill Riparian/ Fresh Emergent Wetland	24	Western pond turtle Peregrine Falcon Burrowing Owl Tricolored Blackbird American badger	Merlin Foothill yellow-legged frog Loggerhead Shrike Townsend's big-eared bat
Sacramento Municipal Utility District	Annual Grassland	2,772	Vernal pool fairy shrimp California linderiella California tiger salamander Prairie Falcon Short eared Owl Long-billed Curlew Townsend's big-eared bat Bogg's Lake hedge-hyssop	Vernal pool tadpole shrimp Western spadefoot Golden Eagle Burrowing Owl California Horned Lark Merlin Sacramento orcutt grass American badger
	Valley Foothill Riparian/ Fresh Emergent Wetland	58	California tiger salamander Western Spadefoot Northern Harrier Ferruginous Hawk Tricolored Blackbird Townsend's big-eared bat	Western Pond Turtle Giant garter snake Swainson's Hawk Merlin American badger
San Luis Water District	Annual Grassland	7,928	California tiger salamander Hoover's eriastrum San Joaquin woolly-threads Townsend's big-eared bat Giant kangaroo rat	Recurved larkspur San Joaquin kit fox American badger Short-nosed kangaroo rat San Joaquin antelope squirrel
	Valley Foothill Riparian/ Fresh Emergent Wetland	80	Foothill yellow-legged frog Townsend's big-eared bat	American badger California tiger salamander
	Alkali Scrub	1,601	Giant garter snake Prairie Falcon Tricolored Blackbird San Joaquin antelope squirrel Fresno kangaroo rat Townsend's big-eared bat Recurved larkspur Hispid bird's beak	Golden Eagle Burrowing Owl Tulare grasshopper mouse Giant kangaroo rat Short-nosed kangaroo rat Heartscale Blunt-nosed leopard lizard Moestan blister beetle
Silverthorn Summer Homes, Inc.	Valley-foothill hardwood- conifer	8	Shasta salamander Golden Eagle	Bald Eagle
	Mixed chaparral	47	Blue-gray Gnatcatcher	
Westlands Water District	Annual Grassland	8,066	Morrison's blister beetle San Joaquin dune beetle Burrowing Owl San Joaquin antelope squirrel Fresno kangaroo rat San Joaquin pocket mouse American badger California jewelflower Recurved larkspur	Hoppings blister beetle Western spadefoot Northern Harrier Short-nosed kangaroo rat Giant kangaroo rat San Joaquin kit fox Townsend's big-eared bat San Joaquin woolly-threads
	Valley Foothill Riparian/ Fresh Emergent Wetland	36	Western spadefoot Giant garter snake Townsend's big-eared bat	Western pond turtle American badger Panoche peppergrass
	Alkali Scrub	28,317	Moestan blister beetle Blunt-nosed leopard lizard Tulare grasshopper mouse Panoche peppergrass	San Joaquin dune beetle Short-nosed kangaroo rat Recurved larkspur

### 5.1.1 Mitigation For Encroachment Land Impacts

It is recognized by both Reclamation and the SWRCB that mitigation for compensating past impacts to encroachment lands must provide similar environmental values that were associated with the affected lands. Suitable mitigation for the impact to 49,602 acres of habitat, as listed in Table 5-1, could consist of several different measures to acquire, maintain, and restore the environmental habitat values needed to support listed species that were previously found on these lands. Measures to obtain these habitat values could include, but are not limited to:

- Acquiring lands for habitat restoration
- Implementing management programs to enhance existing habitat values
- Acquiring development rights to control land use activities to be consistent with target species needs and habitat requirements.

Because several different measures are available to mitigate the impact to encroachment lands, with each method capable of restoring some level of environmental value, the precise combination of measures needed to adequately mitigate the past impact to the encroached lands cannot be identified at this time.

As discussed in the following text, Reclamation is currently implementing several programs capable of achieving the mitigation requirements described in this EIR. These programs consist of ongoing, adaptive management efforts that will, overtime, restore, create and maintain targeted environmental habitat values which would mitigate impacts associated with the construction and operation of the CVP. This program is recognized by the SWRCB as the appropriate means to obtain mitigation for the impacts to encroachment lands, provided that portions of the funds and management efforts would specifically be assigned to mitigating those environmental values adversely affected by the encroachment of CVP water supplies to the 49,602 acres outside the authorized POU.

#### 5.1.1.1 CVPIA Programs Mitigating Impacts to Fish and Wetland Resources

The passage of the Central Valley Project Improvement Act (CVPIA) in 1992 can be viewed as a turning point in the long-standing discussion of the relationship of fish and wildlife resources to the CVP. In general the CVPIA, among many other actions, made protection and maintenance of fish and wildlife resources a project purpose of the CVP, mandated a number of specific actions be undertaken to address fish and wildlife resources, and established a funding mechanism to help carry out these actions. The CVPIA, in essence, sets forth a fish and wildlife mitigation program for the CVP as presently configured and operated.

The CVPIA provides funding and a certain degree of latitude in establishing programs and funding priorities for past impacts of the CVP. Although it is recognized that the major focus of the CVPIA is to address the needs of anadromous fish and waterfowl, a number of the actions implemented under the CVPIA mandated programs have corollary benefits to terrestrial vegetation and wildlife species. In addition, there are other programs within the CVPIA that will provide direct benefits to terrestrial species that have been impacted by the CVP.

Among the programs that would provide corollary benefits to terrestrial species are the anadromous fish and wetland restoration activities. The anadromous fish activities will include habitat acquisition activities, that while directed at developing/protecting stream side habitats primarily for fishery purposes, will provide benefits to terrestrial species by virtue of stream side habitat enhancement. Wetland restoration activities also contribute to these benefits for terrestrial species, and perhaps to a greater benefit than fishery orientated activities. Acquisition and development of wetlands usually involves developing a mosaic of habitats which include not only the wetlands but also adjacent upland habitats.

Several examples of recently implemented habitat restoration/mitigation efforts that Reclamation has implemented consist of:

- **Valensine Ranch Acquisition** - Reclamation has provided substantial funds in a multi-agency organization partnership to purchase 4,300 acres of property. About 90 percent of the property consists of upland habitat types.
- **East Side Lake Berryessa** - Reclamation is funding a planning and habitat restoration effort to develop and enhance over 2,000 acres of uplands on the east side of the lake.
- **Intermountain West, Central Valley Habitat, and Riparian Habitat Joint Ventures** - Reclamation has provided funds for numerous habitat enhancement projects for each of these Joint Ventures. While the focus of the Joint Ventures is primarily wetland and riparian habitat, these projects typically have an upland habitat component associated with them.

These programs demonstrate that Reclamation is actively participating in programs designed to restore and enhance environmental values that were adversely effected by the construction and operation of the CVP. Therefore, the future application of these programs to mitigate impacts associated with effects to encroachment lands is suitable and appropriate.

#### **5.1.1.2 CVPIA Programs Mitigating Impacts to Terrestrial Habitats**

In addition to the programs discussed above, two CVPIA programs that will specifically address terrestrial habitats are the Land Retirement and the (b)(1) "other" Programs.

#### **5.1.1.3 Land Retirement Program**

The Land Retirement Program is directed toward acquiring lands from willing sellers with a preference for acquiring drainage-impaired lands in the CVP service area. In response to a request for proposals in 1997, there were 31 offers to sell drainage-impaired lands totaling 27,500 acres. Of this total, Reclamation anticipates funding purchases of about 12,500 acres.

In 1998, Reclamation will initiate a second effort to identify additional lands to purchase over the next 5 years. Funding for purchases identified in 1997 and through the next effort will be approximately \$50 million over the next 5 years. This level of funding could accommodate the acquisition of up to 60,000 acres, depending on land value and negotiated market cost. In addition to the CVPIA Land Retirement program, the Department of Interior

will jointly investigate the possibility of purchasing additional lands on the west side of the San Joaquin Valley with willing partners.

The CVPIA Land Retirement Program is currently in place and will provide direct environmental benefits that include the restoration of upland habitat in areas where terrestrial species have been significantly effected by CVP-related land use conversions.

#### 5.1.1.4 (B)(1) "other" Program

The (b)(1)"other" Program is specifically designed to mitigate impacts to species and associated habitats that were not specifically enumerated in the CVPIA. The focus of this program is expected to be on sensitive species and upland habitats. Initial focus of this program will be given to habitats known to have experienced the greatest percentage decline in habitat quantity and quality since construction and initiation of operations of the CVP.

All projects that are funded through the (b)(1) "other" Program must be clearly linked to impacts from construction, operation, and maintenance of the CVP, in addition to being ranked in accordance with the program prioritization factors included in the 1997 Draft Program Plan (Appendix F). This program was initially implemented in 1997 and anticipates annual funding in the range of \$1-2 million, annually. Development of specific projects in the (b)(1) "other" program is being closely coordinated with other CVPIA programs and with other Federal, state, and private organizations that are implementing programs with similar goals and objectives.

Examples of specific activities funded include the following:

- Contribution to implementation of Pine Hill Ecological Reserve in El Dorado County to benefit listed plant species (1997-98 funding of \$1.5 million).
- Contribute funding toward acquisition of 60,000 acre property in Merced County which supports several high priority habitats including oak woodland and native grassland (anticipated 1998 funding of \$300,000).
- Contribute funding toward acquisition of property along Sandy Mush Road in Madera County to contribute to recovery of five federally listed species (anticipated 1997 funding of \$100,000).
- Acquisition of Jensen Ranch in Fresno County. This is a 182 acre property along the San Joaquin River facing development pressures that included riparian habitat, oak woodland, and associated uplands.

#### 5.1.1.5 Other Reclamation Programs To Enhance the Environment

In addition to the CVPIA directed or related programs, Reclamation has undertaken additional activities or programs designed to enhance environmental conditions that have been affected by CVP operations. These include the following.

### Central Valley Project Conservation Program

This Program was established in 1997 under the authority of Section 7 (a)(1) of the Endangered Species Act for the primary purpose of undertaking actions to address the needs of species listed in accordance with the federal Endangered Species Act that have been affected by the CVP. A report describing the Program was completed in September 1997 (Appendix G).

A Program Manager has been assigned to develop and manage this Program. The Program is funded to undertake activities starting in October 1998. Anticipated funding is in the order of \$2 million a year. The Conservation Program will address the needs of special status species, including federally listed species, species that are candidates or are proposed species for federal listing, and other species of concern. Each of these species groups will benefit from the Conservation program if they are determined to have high-priority biological needs. The Conservation Program will implement an adaptive management program to protect, restore, and enhance these species and the ecosystems which support them throughout the Central Valley of California and other areas where CVP water is delivered.

Reclamation is committed to a cooperative, interagency approach toward implementation of both the (b)(1) "other" Program and the CVP Conservation Program. In this regard, guidelines describing these programs and the process for selecting habitat restoration activities to be funded have been developed and are publicly available. These guidelines establish the overall objectives of the programs and a framework for implementation. Both programs are dynamic; consequently, these guidelines will be updated periodically to reflect new information, changing ecological needs of species, and input from interested agencies, technical advisors, and the public.

### Section 7 Consultation Actions

Reclamation has also undertaken other activities specifically related to section 7 consultations that broadly address impacts to listed species and terrestrial habitats. As one example of this, Reclamation, in cooperation with the Fish and Wildlife Service has developed a San Joaquin Valley Endangered Species Recovery Program that addresses in a comprehensive manner the needs of terrestrial species in the San Joaquin Valley. This is a comprehensive collaborative approach to determining the needs of sensitive species associated with upland habitats in areas affected by the CVP. Upon finalization, various funding sources will be utilized to implement activities pursuant to this Program.

### CALFED Program

In addition to the Bureau of Reclamation actions described above the CALFED process is developing and beginning to implement an ecosystem restoration program directed to address the impacts of fish and wildlife associated with water development activities. Although this program is presently primarily directed towards aquatic and associated habitats directly related to the Bay-Delta ecosystem, many of the potential activities that would be funded under this program have corollary benefits to terrestrial species. As an example, land acquisition activities in the San Joaquin Valley directed toward riparian and stream side habitats would most likely also include some associated upland habitats. In

addition, as the CALFED restoration effort evolves there may be opportunities to specifically address the needs of terrestrial species in uplands areas. Although future funding for this effort depends on congressional and state government appropriations, it is expected to be substantial. In 1997-1998 alone, approximately \$155 million were made available for these restoration efforts.

#### **5.1.1.6 Rationale of Approach to Achieve Greatest Net Environmental Benefits**

The programs described above are designed to address the impacts of the CVP specifically, in addition to impacts of other water development activities in the Central Valley. These programs for the most part are designed to allow for agency and public input to determine the priority of funding. Thus those agencies that have concerns relative to certain species/habitat types have an opportunity to help determine how these mitigation efforts are undertaken. To a certain extent what is occurring is that rather than continue debates about what project/action was responsible for what impact, and the exact mitigation that may be need for any particular species, programs were developed/authorized that provide funds to address the needs of species through a priority process.

In specific reference to the CVP, Reclamation and the Fish and Wildlife Service have agreed that full and successful implementation of the (b)(1) "other" and Conservation Programs, as well as other CVPIA actions that benefit species, will substantially meet the needs of species affected by the continued operation of the CVP. Taking this proactive approach will now likely reduce or potentially eliminate the need for additional actions under any future Section 7 consultations related to the CVP as it is presently configured and operated. The proposed Section 7 consultation for the continued operation of the CVP and implementation of the CVPIA would guide implementation of the Conservation Program to ensure that identified needs are addressed.

As previously stated, the programs described above have been designed and are being implemented to address the impacts of the CVP, and other water development activities. These programs for the most part allow for the involvement of interested parties to determine the priorities of the programs and subsequently the activities that will be funded. Decisions to proceed with the implementation of these program action are based on the participation and concurrence of the US Fish and Wildlife Service, California Department of Fish and Game, and other interested parties who are actively involved in implementing environmental mitigation/restoration actions in the CVP service area.

#### **5.1.2 Integration of Encroachment Land Mitigation Needs Into Ongoing Reclamation Programs**

In order to ensure that suitable mitigation for encroachment land impacts will be achieved as part of Reclamation's ongoing environmental restoration/mitigation programs, the environmental/habitat values associated with the encroachment lands need to be recognized and considered in the planning and implementation of these programs. This would be accomplished with the participation of the SWRCB, as part of the multi-agency teams, to define the suitability of each future program to satisfy the requirements needed for mitigating impacts to the encroachment lands.

The specific goals and objectives of each project that will be implemented as part of these ongoing programs, as well as, how they may satisfy the mitigation needs for the encroachment lands, cannot be defined at this time. However, it is the intention of the SWRCB that future ongoing Reclamation restoration program activities will focus in part on achieving adequate mitigation or restoration for the environmental/habitat values affected by delivering CVP water to the encroached lands. Reclamation shall be required to develop a schedule for feasible implementation and monitoring of mitigation or restoration actions subject to approval of the SWRCB. In addition, the SWRCB will also compare each mitigation or restoration project's environmental/habitat benefits with a set of criteria to be developed jointly by Reclamation and the SWRCB, that will assign environmental/habitat target values that need to be restored or mitigated for, pursuant to the approval of the petition to change the POU focusing primarily on listed species habitats lost on encroachment lands as identified in Table 5-1.

## 5.2 Mitigation for the Expansion Areas

Section 4 of this EIR described potential impacts associated with future development in the expansion areas. Potential impacts in expansion areas were discussed at a programmatic level because future land and water uses cannot be determined at this time. Mitigation will be developed as part of the site-specific environmental documents to be written for the renewal of CVP water service contracts. Over 67 contracts were scheduled to expire between 1993 and 1997. However, the CVPIA mandated that only interim contract renewals could occur until the Programmatic Environmental Impact Statement for the CVPIA is completed. During contract renewal, a needs analysis to determine beneficial use of the CVP water and a site-specific assessment to determine potential impacts of using CVP water for habitats for Federal and State-listed and proposed species are completed. All contract renewals will be subject to review under the NEPA and ESA processes.

During the NEPA review process, the public will have the opportunity to evaluate and provide input with respect to the beneficial use of CVP water. For impacts associated with delivery of CVP water for municipal and industrial development in expansion areas, local government agencies will have to develop mitigation for county land use plans and project-specific plans during the preparation of CEQA documents. The SWRCB will be a responsible agency under CEQA with respect to project-specific CEQA documents and will make its final decision at that time whether to allow delivery of CVP water to specific expansion areas. In addition, the Federal action of contract renewal will be subject to provisions of the ESA, thus ensuring that impacts to threatened and endangered species will be minimized.

The proposed project would allow delivery of CVP water to currently undeveloped lands that contain characteristics preferred by plant and animal species designated as threatened or endangered by the FWS or the California Department of Fish and Game. These lands would be affected in a significant adverse manner if converted from an undeveloped condition to agricultural, municipal, or industrial land use.

Reclamation will not be authorized under its water rights permits to deliver water for use in these areas until adequate environmental documentation has been prepared in accordance with CEQA and the SWRCB has approved delivery of CVP water to the specific location.

The SWRCB will require applicable CVP water contractors or the appropriate local agency to be the lead agency for the preparation of the environmental document. Lands in the immediate vicinity of the habitats of designated plant and animal species will be defined in consultation with interested regulatory agencies. Upon definition or delineation of the habitat boundaries, site-specific mitigation measures will be developed to protect and preserve the size and values of these areas. Specific measures that may be implemented include:

- Avoiding the special management zones during land conversion, and prohibiting subsequent land management operations that would degrade the value of the zone for which it was defined
- Identifying suitable buffer areas and protecting them by deed restrictions to prevent future disturbance of special habitat management zone resources
- Preparing and implementing plans for offsite mitigation/compensation that will achieve full resource values through reconstruction or enhancement of similar special habitat management zones

Future land development in the expansion areas is a local action, and Reclamation should not be responsible for implementing the land use mitigation measures, except that Reclamation shall not deliver water for use in the expansion areas unless enforceable mitigation measures are in place and approved by the SWRCB for the effects of water delivery in those areas.

The residential development proposal that would be located in the Pine Hill gabbro soils area in El Dorado Irrigation District (EID) is of immediate concern to the SWRCB. This area supports several listed endangered plants as described in Section 4. It is clear that CVP water could be used in the development of approximately 40,000 acres that have plant species proposed for listing as threatened or endangered or species that are already listed. El Dorado County has a County Land Use Plan that has identified these areas as sensitive habitat. The Plan has designated four areas as preserves but the Plan does not protect these areas. Reclamation would not be authorized to deliver any water to these sensitive species areas prior to completing required compliance with the Federal ESA and California ESA (if there are state-listed species). The SWRCB would make this a condition of granting Reclamation's petitions for this project.

## **5.3 Mitigation Monitoring Plan**

### **5.3.1 Introduction**

To effectively reduce, minimize, or avoid significant impacts to identified resources, the SWRCB as lead agency pursuant to CEQA is responsible for designing a reporting or monitoring program that will ensure that mitigation measures adopted as part of project approval are implemented. Reclamation, as petitioner, will be responsible for implementing any conditions that the SWRCB places on its approval of all or part of the petition. Each CVP water contractor, although directly responsible for allocating CVP water to locations within its respective boundaries, is not responsible for implementing mitigation, reporting

on its success, or monitoring its effectiveness, unless it is performed as part of a separate agreement between the CVP water contractor and Reclamation.

To ensure that adopted mitigation measures or programs are implemented pursuant to permit issuance by the SWRCB, the mitigation monitoring plan requires that all parties participate in assigned roles and procedures. To accomplish this objective, a mitigation monitoring program that encompasses all future CVP water delivery plans affecting lands located outside the currently authorized POU must be developed. This program would:

- Identify the responsibilities of all parties including the SWRCB, Reclamation, and individual CVP water contractors in the preparation and review of information regarding development activities and requirements for site-specific habitat mitigation or compensation
- Identify site-specific information regarding development plans, environmental conditions, and appropriate monitoring requirements
- Identify procedures for reviewing, modifying, and approving proposed development plans and monitoring while ensuring compliance with applicable permit conditions
- Require that Reclamation enter into agreements with individual CVP water contractors to establish the contractors' responsibilities and to make their compliance a condition of receiving water

### **5.3.2 Monitoring Plan Description**

The following discussion outlines the roles and responsibilities of the three parties (CVP water contractors, Reclamation, and the SWRCB). The activities discussed below would occur prior to the introduction of CVP water supplies to lands where significant adverse effects to identified environmental resources may occur.

#### **5.3.2.1 Role of the CVP Water Contractors**

Each CVP water contractor or designated CEQA lead agency would prepare and submit a plan and appropriate CEQA environmental document to Reclamation for lands located within the expanded POU that are currently undeveloped and could be served CVP water. Each plan would include any required take authorization pursuant to Fish and Game Code §2081 (California ESA). The plan would, at a minimum, describe:

- The location of lands to be served CVP water
- The location of proposed water delivery facilities including pump stations, pipeline/canal right-of-way, and other appurtenant facilities
- Environmental conditions of those lands that would receive CVP water or would support the installation of required water delivery facilities

- Suitable site-specific mitigation measures that would be implemented as part of facility installation and operation. Mitigation will be of sufficient detail to fully describe the type of mitigation being proposed, objectives and/or criteria to measure successful mitigation, schedule for implementation, and monitoring provisions for recording effectiveness
- Correspondence with relevant federal, state, and local regulatory, resource management, and land management agencies indicating that measures developed are suitable for the protection, mitigation, and/or maintenance of environmental resources

This information would be submitted to Reclamation in addition to other Reclamation-required information needed to allow connection to Reclamation facilities and/or use of CVP water to lands included in the modified place of use boundary. This information would not preclude or alleviate the individual CVP water contractors from CEQA or NEPA or other permit review requirements that may be mandated by other federal, state, or local permitting agencies prior to application of water to the expanded POU.

### **5.3.2.2 Role of the Bureau of Reclamation**

#### **Monitoring Encroachment Land Mitigation**

Reclamation will work jointly with SWRCB to develop criteria for evaluating the effectiveness of future environmental restoration or mitigation projects in restoring the appropriate environmental/habitat values needed to mitigate encroachment land impacts.

#### **Monitoring Expansion Land Mitigation**

Reclamation will be responsible for submitting CVP water contractor-prepared information to the SWRCB for review and approval, prior to the delivery and use of CVP water supplies to the expansion area lands outside the authorized POU. Upon approval of mitigation monitoring plans by SWRCB, Reclamation will inform the CVP water contractors of any additional measures or obligations, as imposed by SWRCB, as part of authorizing CVP water deliveries to the expansion lands.

### **5.3.2.3 Role of the SWRCB**

#### **Monitoring Encroachment Land Mitigation**

SWRCB will work jointly with Reclamation to develop criteria for evaluating the effectiveness of future environmental restoration/mitigation projects to restore the appropriate environmental/habitat values needed for mitigation of encroachment land impacts. In addition, SWRCB will consult with Reclamation and provide guidance and comments regarding the implementation of future programs to adequately mitigate encroachment land impacts

#### **Monitoring Expansion Land Mitigation**

The SWRCB will be responsible for approving a Reclamation-prepared reporting and monitoring program that will ensure that mitigation is being implemented pursuant to

permit conditions. Reclamation would submit CVP water delivery plans to the SWRCB, including project-specific mitigation measures. The SWRCB would evaluate the Reclamation-approved CVP water delivery plans to ensure:

- Compliance of mitigation measures that were assigned as part of the water rights permit conditions are met or completed in a timely manner
- Mitigation effectiveness in accordance with recommendations by interested federal, state, and local agencies participating in the review of the proposed project

# Cumulative Effects

## 6.1 Introduction

This section describes the anticipated cumulative effects associated with past land and water development, the proposed project and alternatives, and other ongoing and reasonably foreseeable future projects that may affect environmental resources of the project area and vicinity. Because land and water development in the Central Valley has been ongoing throughout the past 100 years, much information regarding historic environmental conditions is qualitative. In addition, because there have been many projects in the Central Valley that have been implemented by federal, state, local, and private entities, it is not possible to assign responsibility for historic impacts on the physical and biological resources of the region to any single entity or group of entities. Therefore, this analysis does not speculate about the identity of projects that have had historic adverse impacts on the environment of the Central Valley.

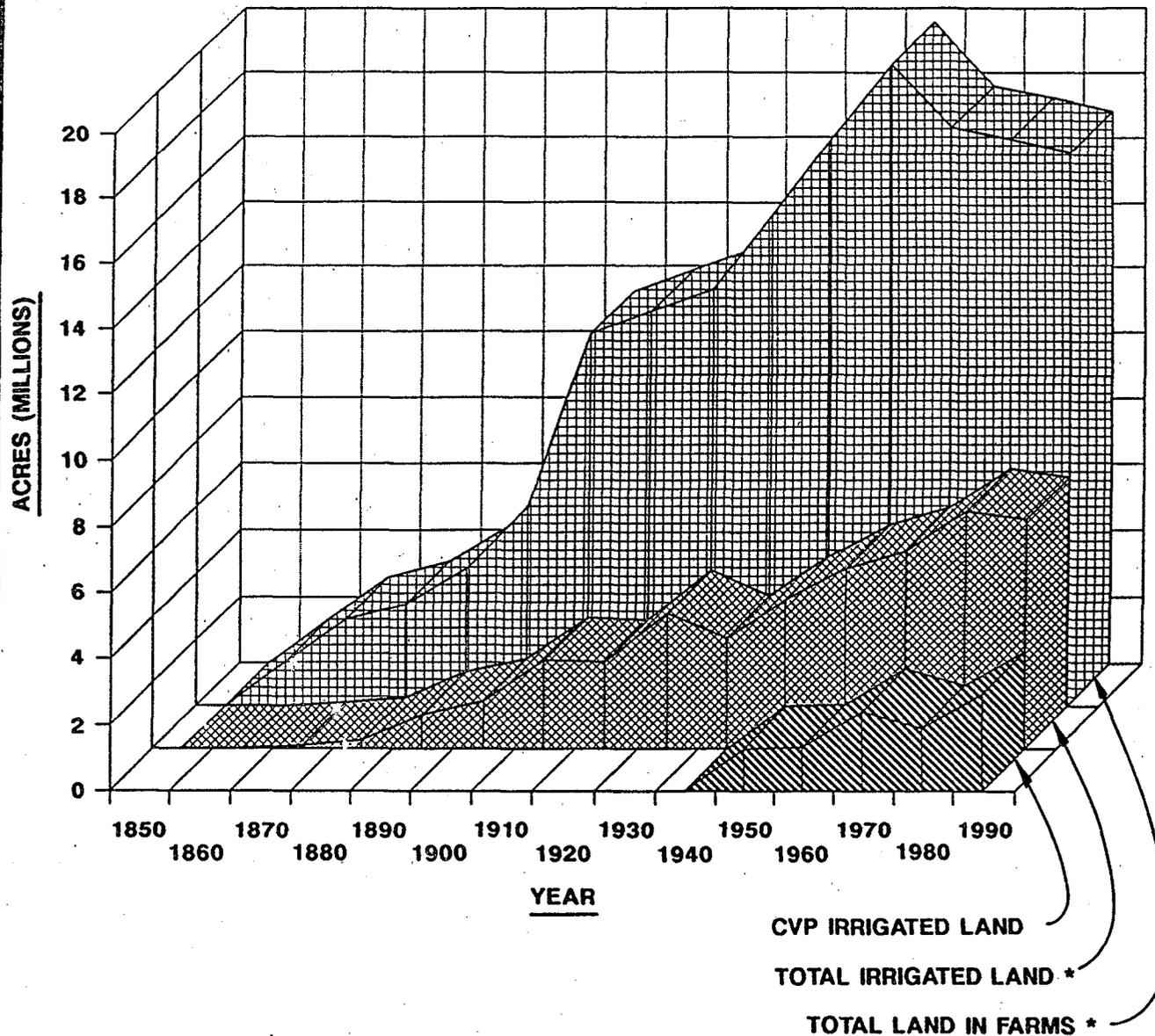
## 6.2 Cumulative Effects of Past Land and Water Development

The U.S. Fish and Wildlife Service (FWS) recently noted that about 85 percent of wetlands and about 30 percent of all habitats in the Central Valley had been altered by land and water development immediately prior to the operation of the CVP (FWS, 1995). These habitat losses resulted from land use changes and the introduction of human populations to the Central Valley from Spanish colonization to the late 1930s. During this period, and especially during the late 1800s and early 1900s, substantial development of the Central Valley occurred because of the introduction of agriculture, grazing, the development of rural and urban communities.

The CVP contributed to these habitat losses by providing water that supported agricultural, municipal, and industrial land uses in the Central Valley. The FWS believes that about 25 percent of the total 7.8 million acres of altered habitat in the Central Valley is attributable to the CVP (FWS, 1995). Therefore, the operation of the CVP has contributed to the degradation of about 2 million acres of native habitat in the Central Valley while providing water supplies for beneficial uses such as agricultural, municipal, and industrial land uses.

Figure 6-1 illustrates the historic increase of improved agricultural acreage in the Central Valley. As shown, agriculture has increased from about 1.3 million acres in the 1860s to about 19.5 million acres in the 1960s. This acreage has subsequently declined because of land being removed from commercial agricultural production and encroachment of urban land uses in the valley. It is estimated that from 50,000 to 100,000 acres of agricultural land are urbanized on an annual basis (Jelinek, 1979).

In the early 1950s, CVP water was delivered to about 1.25 million acres. Lands served by the CVP continued to expand to over 2 million acres by 1990; however, in many areas new lands were not brought into production from CVP water use, but exchanged water sources with local surface water or groundwater.



\* INCLUDES LANDS OUTSIDE THE CENTRAL VALLEY FLOOR

**FIGURE 6-1  
CUMULATIVE CHANGE  
CENTRAL VALLEY AGRICULTURE**

**CONSOLIDATED AND EXPANDED  
PLACE OF USE ENVIRONMENTAL IMPACT REPORT**

SOURCE: STATE OF CALIFORNIA, 1961, 1970, 1979, 1990;  
AND USDI, BUREAU OF RECLAMATION, 1989

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## 6.3 Other Projects and Reasonably Foreseeable Actions Contributing to Cumulative Effects

Other actions being implemented or proposed to be implemented by Reclamation or other federal, state, local, or private entities would contribute in an incremental manner to the cumulative impact on physical and biological resources of the region. Many of these actions have no direct relation to the changes to the water rights permits being addressed in this document. These actions, however, may be indirectly related to those changes because they have the potential to alter or modify CVP operation, which, in turn, could affect the CVP's compliance with existing terms and conditions assigned by the water rights permits.

### 6.3.1 Projects that May Contribute to Cumulative Impacts

Of the many actions being considered by Reclamation and other entities, only a few have proceeded beyond the initial study phase and have gone on to design, pre-construction, or construction phases. Table 6-1 lists the projects or actions currently being considered by Reclamation or other federal entities that would contribute in an incremental manner to the cumulative impact on physical and biological resources of the region. The projects that have not proceeded beyond the initial study phase have not been included in Table 6-1 because it would be speculative to assume that they would be implemented at this time.

<b>Action</b>	<b>Consequences</b>
SWRCB Water Rights and CALFED Bay-Delta Planning Programs	<ul style="list-style-type: none"> <li>• Changes in Delta inflow and associated instream releases</li> <li>• Restoration of habitat in streams and actions to improve water quality</li> <li>• Development of new storage and/or Delta conveyance facilities</li> </ul>
Changes Water Transfer Actions	<ul style="list-style-type: none"> <li>• More extensive non-CVPIA water transfers than assumed in Base Transfer Scenario for alternatives with CVPIA transfers</li> </ul>
Changes in Federal Farm Programs	<ul style="list-style-type: none"> <li>• If lands fallowed or retired due to CVPIA actions continue to accumulate support payments, net revenue to farmer may increase and the revenue to the Federal Treasury may not increase</li> </ul>
Fishery Programs	<ul style="list-style-type: none"> <li>• Changes in use of hatcheries could occur based upon future studies</li> <li>• Changes in harvest limitations could occur in the future</li> </ul>
Yield Increase Plan	<ul style="list-style-type: none"> <li>• Development of facilities and programs to increase CVP water supplies to reduce impact of shortages from CVPIA actions</li> </ul>
Additional Wetlands	<ul style="list-style-type: none"> <li>• Improve reliability of water supplies to private wetlands and develop new wetlands. A portion of the new wetlands considered in the Draft PEIS alternatives</li> </ul>

### 6.3.1.1 Other Ongoing Reclamation Actions that May Contribute to Cumulative Impacts

- **CALFED Bay-Delta Program** - The CALFED Bay-Delta Program (CALFED Program) started in June 1995 as a collaborative effort to address a declining ecosystem, uncertain water supplies, imperiled water quality, and unstable levees in the San Francisco Bay-San Joaquin River Delta. The federal and state agencies that are participating in this effort are:
  - California Resources Agency (including the California Department of Fish and Game and the California Department of Water Resources)
  - California Environmental Protection Agency (including the State Water Resources Control Board)
  - U.S. Environmental Protection Agency
  - U.S. Department of the Interior (including the U.S. Fish and Wildlife Service and the U.S. Bureau of Reclamation)
  - U.S. Department of Commerce (including the National Marine Fisheries Service)

The purpose of the CALFED Program is to develop a long-term solution to problems affecting the Delta. The CALFED Program is evaluating alternatives, including several water storage options that include groundwater banking, offstream surface water storage, and conjunctive use. The CALFED Program could also develop more reliable water supplies, and thereby reduce the impacts of Central Valley Project Improvement Act (CVPIA) actions on CVP water contractors through the construction of new storage and conveyance facilities.

- **Central Valley Project Improvement Act (CVPIA)** - Reclamation is undertaking a series of actions to manage the water resources of the CVP to benefit a wide variety of uses. These actions are being taken to meet the requirements of legislation such as the CVPIA and other requirements established through federal legislation. Major ongoing actions by Reclamation that directly affect the distribution and delivery of water to CVP water contractors or may have a direct effect on the operations of the CVP are described below.

The CVPIA requires Reclamation to implement a series of actions designed to improve the operations of the CVP to provide greater benefit to fish and wildlife resources. The actions expected to be implemented include both short-term and long-term programs to comply with requirements of the federal Endangered Species Act. Specific provisions of the CVPIA that could affect the lands and resources of the CVP water contractors include:

- **3404 - Limitations on Contracting and Contract Reform** - Asserts that water delivery contracts shall be renewed on request and describes conditions for renewing existing contracts.
- **3405(a) - Water Transfers** - Authorizes individuals or districts to transfer some or all of their water, with conditions.
- **3405(b) - Water Meters** - Requires that all CVP surface water delivery systems be equipped with water-measuring devices.
- **3405(c) - State and Federal Water Quality Standards** - Requires that CVP water contractors be responsible for meeting applicable water quality standards in agricultural drainage.
- **3405(d) - Water Pricing Reform** - Imposes a tiered water pricing structure on water sold to CVP contractors.
- **3405(e) - Water Conservation Standards** - Requires the development of criteria for evaluation of water conservation plans.
- **3406(d)(1) - Level 2 Refuge Water Supply** - Requires that Level 2 water be delivered to assigned refuges. Level 2 supplies are the historical average annual water supplies available to the national wildlife refuges and state wildlife areas addressed in the 1989 Report on Refuge Water Supply Investigations.
- **3406(d)(2) - Level 4 Refuge Water Supply** - Requires that, within 10 years, Level 4 water be delivered to assigned refuges within 10 years. Level 4 supplies are the total quantity of water required for the optimum management of each of the national wildlife refuges and state wildlife areas addressed in the 1989 Report on Refuge Water Supply Investigations.
- **3408(d) - Use of Project Facilities for Water Banking** - Authorizes agreements to allow CVP water contractors to use CVP facilities for water banking, with conditions.
- **3408(h) - Land Retirement** - Authorizes purchase of agricultural lands and associated water rights from willing sellers, with conditions.
- **3411 - Compliance with State Water Law and the Coordinated Operating Agreement** - Requires modifications to water rights permits and licenses for changes to purpose of use or place of use to comply with federal obligations of the Coordinated Operating Agreement.
- **Long-Term Contract Renewals** - This program will be implemented upon completion of the CVPIA Programmatic EIS. It will be designed to provide CVP water to water contractors for a period of up to 25 years, while meeting the compliance requirements of the federal Endangered Species Act.

- **Amended Point of Diversion** - There is a petition before the SWRCB that would change Reclamation's existing water rights permits to add the existing water pumping plant at Tracy as a point of diversion and re-diversion, and would remove the maximum 4,600 cfs pumping limit from Reclamation's water right permit.

### 6.3.2 Private- and Local Government-Sponsored Projects that May Contribute to Cumulative Impacts

Private- and local government-sponsored land and water developments in CVP water contractor service areas outside the authorized POU may contribute to cumulative impacts by proposing projects, rezoning parcels, and redesignating land uses within the local jurisdictions. Changes in zoning and land uses could result in a wide range of environmental impacts, including loss of vegetation and habitat, associated effects on wildlife, air emissions, impacts on soil (erosion), and impacts on water quality.

Changes in demand for agricultural products could contribute to a wide range of environmental impacts on lands outside the authorized POU, including loss of vegetation and habitat, effects on wildlife, impacts on air quality, soils, and water quality. Examples of this include (1) if changes in demand for crops occur resulting in an increase in crop value, more lands may be brought into production; or (2) if changes in demand for crops occur resulting in a decrease in crop value, lands may become non-productive or converted to a different crop type. In addition, if the price of water becomes too high, lands may be converted to an M&I use, which would result in impacts associated with increased urbanization.

As described in Section 5, Reclamation is committed to monitoring future land use changes to ensure that CVP water is not used in a manner that is inconsistent with the federal Endangered Species Act. However, there are no restrictions on local management agencies regarding approval of future land development projects that would need CVP water.

## 6.4 Analysis of Cumulative Effects

The proposed project would increase the acreage of the authorized POU by about 834,667 acres, an increase of 6 percent over the current 13-million-acre POU. Of these lands, about 683,393 acres are undeveloped, and 151,274 acres have already been developed with either CVP water or other water. Although the proposed project would not directly affect land uses or change existing environmental conditions, the availability of CVP water could support future land development and land use changes that may be implemented by local land management authorities or individual land owners.

Only 21,678 acres of the total 683,393 undeveloped acres (3.2 percent) could receive CVP water without the individual CVP water contractors reallocating the distribution of their contracted water within their areas.

### 6.4.1 Cumulative Effects on Wildlife Habitats and Threatened or Endangered Species

Future land development that could be supported by the proposed project could potentially increase the loss of wildlife habitats by about 21,678 acres, assuming historical water deliver patterns. Additional acreage in the immediate vicinity of areas served CVP water could also be developed if CVP water percolates into the groundwater system and is pumped and reapplied to other agricultural lands. This loss of habitat would be significantly adverse if habitat for species designated as threatened or endangered were adversely affected. As noted in Section 4, such habitats are found in each of the CVP water contractor areas being addressed in this EIR.

Mitigation is available to avoid impacts to these species' habitats. As noted by the FWS (1995), the implementation of the FWS mitigation program would (1) ensure that the use of CVP water is consistent with the federal Endangered Species Act, (2) effectively avoid impacts to these species, and (3) likely improve conditions throughout the Central Valley. A similar mitigation program is recommended in Section 5 of this EIR to avoid impacts to the habitats and species designated pursuant to the California Endangered Species Act. This additional mitigation would effectively avoid additional impacts to state-listed species. Therefore, the proposed project would not contribute to adverse cumulative impacts on threatened and endangered vegetation and wildlife species.

### 6.4.2 Cumulative Effects on Air Quality

Future municipal and industrial development on lands served CVP water could contribute to increases in air emissions of hydrocarbons, nitrogen oxides, sulfur oxides, and other pollutants associated with urban development. Future agricultural development could increase emissions of PM<sub>10</sub> and other particulates. However, the total contribution resulting from future development on lands that would be served CVP water would be minor when compared to the existing total municipal, industrial, and agricultural air emission sources.

Mitigation is available to reduce or minimize air emissions from future development. Air Pollution Control Districts (APCDs) are obligated pursuant to federal and state statutes to implement actions to prevent the deterioration of local and regional air quality. Mitigation includes project-specific measures that would be assigned, as needed, by the local APCDs during their review of future individual development projects. Therefore, the proposed project would not contribute to adverse cumulative impacts on air quality.

### 6.4.3 Cumulative Effects on Groundwater Resources

Future development on CVP-served lands outside the authorized POU would not need to rely on local surface or groundwater if the proposed project is implemented. Therefore, the relocation of the authorized POU would not contribute to declines in local groundwater resources.

In agricultural lands, local groundwater sources may be enhanced if CVP water is applied at rates that promote deep percolation. These waters could be eligible for withdrawal for reuse if available in sufficient quantities and quality. This is considered a beneficial impact, and would not contribute to adverse cumulative effects on groundwater resources.

Contamination of shallow groundwater resources could occur if lands containing trace elements are irrigated by CVP water associated with the proposed project. The concentration of trace elements in shallow groundwater could pose potential adverse impacts in local areas. Mitigation is recommended in Section 5 to avoid future impacts resulting from the concentration of trace elements in shallow groundwater. Implementation of this mitigation would effectively avoid or reduce potential impacts to groundwater quality to a nonsignificant level, and would result in no cumulative adverse impact on groundwater in the Central Valley.

#### **6.4.4 Cumulative Effects on Land Use**

As noted in Section 4 of this EIR, the proposed expansion of the authorized POU would likely result in land use changes. The availability of CVP water could support future development, as determined appropriate by local land management authorities. Such development would be consistent with local land use policies and plans. Therefore, no cumulative adverse effect on land use would occur with implementation of the proposed project.

# Growth-Inducing Effects

## 7.1 Introduction

As defined in CEQA Guidelines Section 15126(g), a growth-inducing effect could occur when the implementation of a project fosters economic or population growth in the surrounding environment. Included in this are projects that would remove obstacles to population growth. Growth could result in an increased demand for public services.

### 7.1.1 Growth-Inducing Effects of the Proposed Project and Alternatives

The proposed project would not directly induce growth or land use changes on lands that would be incorporated into the authorized POU. The expansion of the authorized POU could allow CVP water to be delivered, and such delivery may encourage or facilitate future growth or development authorized by local land management authorities. Therefore, the proposed project would accommodate potential future growth by enabling individual CVP water contractors to supply water to future developments.

#### 7.1.1.1 Growth-Inducing Effects of the Proposed Project

Of the total 834,667 acres of CVP water contractor served land outside the authorized POU, 151,274 acres are currently developed into dryland agriculture or irrigated agriculture or M&I uses receiving water from the CVP water contractors or other sources. About 683,393 acres are not developed in agricultural or M&I land uses. Based on the analysis of available water that could be distributed to future developments, it is estimated that an additional 17,961 acres of municipal and industrial and 3,717 acres of agricultural development could be served CVP water. Therefore, although the proposed project would not directly induce growth or land use changes, it could accommodate the future development of 21,678 acres of M&I and agricultural development.

The CVP water contractors that have CVP water available to serve the potential future growth are listed in Table 7-1. This table also presents the estimated amount of water available for future development and the amount of acreage that could be supported by available water. This estimate is based on no substantial reallocation of existing water uses occurring within the CVP water contractor service boundary.

#### 7.1.1.2 Growth-Inducing Effects of Alternative 1 (No Project)

This alternative could result in growth-inducing effects because CVP water would no longer be served to about 60,121 acres of M&I lands and 56,543 acres of agricultural lands. To support the existing land uses, other water sources would need to be acquired.

CVP Water Contractor	Amount of Available CVP Water (acre-feet)	Land Use Changes (acres)	
		Agriculture	M&I
Bella Vista Water District	7		3
Coalinga, City of	3,262		1,631
Colusa County Water District	618	210	
El Dorado Irrigation District	2,550		1,275
Glenn Valley Water District	469	41	
Kanawha Water District	3,301	213	
Mountain Gate Community Services District	222		111
San Benito County Water District	23,683	150	
Santa Clara Valley Water District	33,812	2,530	13,187
Shasta Community Services District	<sup>a</sup>		51
Shasta County Service Area No. 25--Keswick	318		1,590
Shasta Lake, City of	262		113
Westside Water District	<sup>b</sup>	573	

<sup>a</sup> Historical water use is not indicated; however, 1,000 acre-feet of water is sufficient to serve all 51 acres.  
<sup>b</sup> Historical water use is not indicated; however, 25,000 acre-feet of water is sufficient to irrigate all 997 acres.

A secondary environmental effect may occur if the CVP water is replaced with other sources of water, and these other supplies require the installation of groundwater wells, water conveyance and delivery facilities, or energy consumption resulting from increased water pumping. The development of other water sources would most likely occur to replace M&I water. Because CVP water currently supports residential, commercial, and industrial land uses that required substantial individual and community investments, it is likely that other water sources would be acquired to meet water supply needs and avoid health and safety impacts to the public.

It is less likely that other water sources for agricultural land uses would be acquired, unless the water could be delivered to lands at a reasonable cost. If the acquisition of irrigation water is too expensive, the irrigated agricultural practices could be abandoned. This could result in an increase in dryland agriculture conversion to M&I uses, or allowing the lands to return to an undeveloped condition. If another water source is not acquired to support agricultural land uses, no growth-inducing effects would occur.

#### 7.1.1.3 Growth-Inducing Effects of Alternative 2 (Existing Conditions)

Alternative 2 would not generate any growth-inducing effects because it would expand the authorized POU to encompass land already receiving CVP or other water. Water delivered as a result of implementing this alternative would only accommodate existing

development. About 62,035 acres of M&I lands and 83,435 acres of agricultural lands outside the authorized POU have been developed with CVP and other water. This alternative would not result in further development of lands with CVP water.

**7.1.1.4 Growth-Inducing Effects of Alternative 3 (Permit Consolidation and Conformance)**

This alternative would result in the same impacts as those discussed for Alternative 1 (No Project).

SECTION 8

## Significant Irreversible Environmental Changes

As discussed in Section 4 of this Program EIR, the proposed project is expected to result in significant adverse environmental impacts to vegetation and wildlife resources. Delivery of CVP water to expansion lands could result in significant impacts; therefore, no approval can be issued until adequate site-specific environmental documentation on water delivery proposals is completed.

If mitigation that is identified in Section 5 is implemented to avoid, reduce, or minimize the adverse effects, it is expected that all of the significant adverse impacts could be reduced to levels not significant. Therefore, there would be no significant irreversible environmental changes associated with the proposed project or three alternatives.

SECTION 9

## Preparers of the EIR

### 9.1 State Water Resources Control Board

Mike Falkenstein, Environmental Section Program Manager  
Dave Cornelius, Senior Hearing Specialist  
Jim Canaday, Environmental Specialist  
Barbara Leidigh, Senior Staff Counsel

### 9.2 USDI Bureau of Reclamation

Charles Johnson, Regional GIS Program Manager  
Douglas Kleinsmith, Environmental Specialist  
John Renning, Hydraulic Engineer  
Connie Rupp, Water Rights Specialist

### 9.3 CH2M HILL

Richard Hunn - Project Manager  
Pamela Beekley - Air Quality  
Earl Byron - Fish Resources, Water Quality  
Fritz Carlson - Groundwater Resources  
Marjorie Castleberry - Terrestrial Biological Resources  
Kathy Freas - Terrestrial Biological Resources  
Wendy Haydon - Local Land Use Policies, Recreation, and Visual Resources  
Roger Mann - Economics

### 9.4 Subconsultants

Peter Jensen, Ph.D., Archaeologist, Jensen & Associates - Cultural Resources  
Mike Sebhat, Geographic Information Systems Analyst, Recom Technologies - District Graphics

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APPENDIX A

# Notices of Petition and Preparation

Document Name	Page Number
Notice of Petition for Changes and Extension of Time to Complete Use of Water Under Permit 12721 (Application 5626) and 18 Others, Dated July 29, 1986	A-1 to A-7
Notice of Preparation of Environmental Impact Report for Consideration of Petitions by the United States Bureau of Reclamation (USBR) to Amend 19 Water Rights Permits to Divert, Store, and Redivert the Waters of the Sacramento, Trinity, American, Stanislaus, and Old Rivers and Clear and Stony Creeks, Dated December 1, 1986	A-8 to A-20
Notice of Petition for Changes Under Permit 12721 (Application 5626) and 18 Others, Dated December 1, 1986	A-21 to A-26

NOTICE OF PETITION FOR CHANGES  
AND EXTENSION OF TIME  
TO COMPLETE USE OF WATER  
UNDER PERMIT 12721 (APPLICATION 5626)  
AND 18 OTHERS

Notice is hereby given that:

The U. S. Bureau of Reclamation  
2800 Cottage Way, MP-710  
Sacramento, CA 95825

has filed petitions with the State Water Resources Control Board to:

1. Consolidate the Central Valley Project place of use.
2. Expand the permitted place of use.
3. Conform the purposes of use.
4. Extend the time in which to complete the permitted use of water.

Petitioned items 1 and 2 were filed September 24, 1985. Item 3 was petitioned by amendment of the initial petition on February 6, 1986. The petition to extend time (item 4) was filed May 28, 1986.

The substance of the 19 permits affected by the above petitions is summarized in Table 1 (attached).

DESCRIPTION OF PETITIONED ACTIONS:

1. Consolidate the places of use within the Central Valley Project (CVP) Service Area

The CVP service area extends from Shasta Lake in the north to the southern end of the San Joaquin Valley. The CVP is operated as an integrated project composed of several units authorized by Congress. Due to the physical layout of the water supply features serving the Central Valley, water diverted by some units of the CVP is commingled with water from 1) other CVP sources, 2) other water supply projects, 3) return flows from irrigation and 4) natural flow, prior to rediversion and use. For each sub-area of the CVP service area, the water supply may originate from a different combination of water supply facilities or sources. The actual mix of the commingled supply varies from season to season and year to year. The permittee has requested this action so that their permits will be consistent with the current integrated operation of the CVP and to simplify accounting for use of water under the various permits by having the allowable places of use under the various permits conform to the possible sources of supply for each sub-area. The consolidated place of use requested in the petition is within the area shown on Map 1 (attached).

2. Expand the authorized place of use under the permits for the CVP

The U. S. Bureau of Reclamation (Bureau) has contracts with numerous water Districts some of whose current service areas extend outside the area shown on the application maps which identify the allowable places of use under the permits. These areas are all within the place of use for the CVP authorized by congress. The petition proposes changes in the place of use to include these service areas within an expanded gross service area with recognizable boundaries. The proposed place of use boundary lines generally follow Township, Range or Section lines, County lines or physical boundaries such as stream channels or watersheds. The present permitted place of use has a gross area of about 13,000,000 acres. The petition would increase the gross area to approximately 17,000,000 acres, an increase of about 4,100,000 acres. The net irrigated area in the place of use will be about 2,200,000 acres. The new boundary lines are shown on Map 1. Detailed maps showing the existing and proposed places of use are available for inspection at the above listed office of the Bureau or at the Division of Water Rights office at 901 P Street, 3rd Floor, in Sacramento.

3. Conform the Purposes of Use

Most of the 19 permits authorize the same major purposes of use. However, different minor purposes of use are authorized in several of the permits. An amendment to the petition requests that the purposes of use be amended and conformed so that permitted uses of water from all sources are the same. The amended and conformed purposes of use requested in the February 6, 1986 amendment to the original petition are:

Irrigation, Frost Protection and Heat Control, Municipal, Industrial, Domestic, Stockwatering, Navigation, Recreation, Fish and Wildlife Protection and Enhancement, and Water Quality.

4. Extension of Time to Complete Use

The present date to complete use under the 19 permits is December 1, 1990. Major project features have been constructed and substantial use of water has been made. On May 27, 1986 the Bureau submitted a petition for a ten year extension of time to complete use of water under the various permits.

The Bureau is not proposing any changes in the sources of water diverted or rediverted. The petitioned actions noticed herein do not involve any changes in points of diversion, rediversion or increases in the existing limits or rates of diversion or rediversion.

ENVIRONMENTAL INFORMATION

Staff from the State Water Resources Control Board and the Bureau will conduct an environmental review to determine whether the proposed actions would unreasonably affect fish, wildlife or other beneficial uses within the proposed place of use. A joint Environmental Impact Statement/Environmental Impact Report may be required as a result of this review. Information concerning this review can be obtained by contacting Ross Swenerton at (916) 324-5639 or by writing to him at P. O. Box 2000, Sacramento, CA 95810.

RELATIVE TO PROTESTS

Protests may be based on possible injury to prior rights or an allegation that the proposed changes to the various appropriations would not be within the Board's jurisdiction, would not be in the public interest, would have an adverse environmental impact, would result in waste, unreasonable method of use, or unreasonable method of diversion, would impair public trust uses, or would be contrary to law.

FORMS UPON WHICH TO SUBMIT PROTESTS WILL BE SUPPLIED FREE UPON REQUEST

Any person desiring to protest the granting of the petitioned actions shall within 45 days from date hereof file a written protest with the Division of Water Rights, P. O. Box 2000, Sacramento, CA 95810. A copy of any protest shall be sent to the petitioner. Any such protest shall clearly set forth the protestant's objections to the petitioned actions and shall be on the forms provided by the Board. Protests regarding uses currently allowed under the permits or regarding issues unrelated to the consolidation and expansion will not be accepted.

If a protestant's right to water is junior in priority to that of the petitioner and/or the protest is based on injury to the public resources, a complete statement of facts supporting the allegation that the petitioned actions are adverse to the protestant and/or the public resource must be included.

*Raymond Walsh*  
Raymond Walsh, Chief  
Division of Water Rights

Dated:           **JULY**   29 1986  
Sacramento, California

TABLE I

SHEET 1 OF 3

PERMITTED APPLICATIONS INVOLVED IN USBR PETITION TO CONSOLIDATE AND EXPAND THE PLACE OF USE  
AND CONFORM PURPOSES OF USE FOR THE FEDERAL CENTRAL VALLEY PROJECT

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
5626	12721	Sacramento River Shasta Dam Delta Mendota Canal	8,000	Jan 1 to Dec 31	3,190,000	Oct 1 to Jun 30	Irrigation, domestic stockwatering, navigation & recreation
5628	11967	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	2,500	Jan 1 to Dec 31	1,540,000	Jan 1 to Dec 31	Irrigation, domestic navigation, salinity control & flood control
9363	12722	Sacramento River Shasta Dam Delta Mendota Canal	1,000	Jan 1 to Dec 31	310,000	Oct 1 to Jun 30	Municipal & Industrial
9364	12723	Sacramento River Shasta Dam Delta Mendota Canal	9,000	Jan 1 to Dec 31	1,303,000	Oct 1 to Jun 30	Irrigation, flood control, domestic, stockwatering, navigation & recreation
9366	12725	Rock Slough (Delta) Contra Costa Canal	200	Jan 1 to Dec 31	--	--	Irrigation & domestic
9367	12726	Rock Slough (Delta) Contra Costa Canal	250	Jan 1 to Dec 31	--	--	Municipal & Industrial
9368	12727	Old River (Delta) Delta Mendota Canal	4,000	Jan 1 to Dec 31	--	--	Irrigation & domestic
13370	11315	American River Folsom Dam	8,000	Nov 1 to Aug 1	1,000,000	Nov 1 to July 1	Irrigation salinity control & flood control

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C-093657

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
13371	11316	American River Folsom Dam	700	Nov 1 to Aug 1	300,000	Nov 1 to July 1	Municipal, industrial, domestic & recreation
14858A	16597	Stanislaus River New Melones Dam	--	--	980,000	Nov 1 to June 30	Irrigation, domes- tic, municipal, industrial, recrea- tion, water qual- ity, fish & wild- life enhancement.
15374	11968	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	300	Jan 1 to Dec 31	200,000	Jan 1 to Dec 31	Municipal & industrial
15375	11969	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,700	Jan 1 to Dec 31	1,800,000	Jan 1 to Dec 31	Irrigation, domes- tic, fish & wild- life propagation, navigation, water quality control & recreation
15764	12860	Old River (Delta) San Luis Dam Offstream Storage* via Delta Mendota Canal			1,000,000*	Nov 1 to Apr 30	Irrigation, domes- tic, stockwatering, municipal, indus- trial & recreation
16767	11971	Trinity River Trinity Dam Lewiston Dam Clear Creek Tunnel Delta Mendota Canal	--	--	700,000	Jan 1 to Dec 31	Irrigation, domestic & water quality control.

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C-093658

C-093658

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
17374	11973	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,500	Jan 1 to Dec 31	--	--	Irrigation, domestic, municipal, industrial, salinity control, recreation, fish & wildlife enhancement
17376	12364	Clear Creek Whiskeytown Dam Delta Mendota Canal Contra Costa Canal	3,600	Nov 1 to Apr 1	250,000	Nov 1 to Apr 1	Irrigation, domestic, navigation, water quality control & recreation
18115	13776	Stony Creek Black Butte Dam Orland South Main Canal Delta Mendota Canal	--	--	160,000	Nov 1 Apr 30	Irrigation, domestic, municipal, industrial, recreation
19304	16600	Stanislaus River New Melones Dam	--	--	1,420,000	Nov 1 to June 30	Irrigation, domestic, municipal, industrial, recreation, water quality, fish & wildlife enhancement
22316	15735	Rock Slough (Delta) Contra Loma Dam Offstream Storage** via Contra Costa Canal	--	--	5,400**	Oct 1 to Jun 30	Irrigation, domestic, municipal, industrial, water quality control & recreation

\* The maximum rate of diversion to offstream storage in Permit 12860 (Application 15764) is 4,200 cfs

\*\* The maximum rate of diversion to offstream storage authorized in Permit 15735 (Application 22316) is 21.16 cfs.

**PERMIT GROUPS AND POINTS OF DIVERSION FOR THE CVP**

GROUP*	MAJOR FACILITY	PERMITTED WATER RIGHT APPLICATION	MAJOR FACILITY LOCATION SHOWN ON MAP 1 *
A	Trinity Dam	5268, 15374, 15375, 16767, 17374	4
B	Whiskeytown Dam	17376	6
C	Shasta Dam	5626, 9363, 9364	1
D	Black Butte Dam	18115	8
E	Folsom Dam	13370, 13371	9
F	Delta Mendota Canal	9368	14
G	Contra Costa Canal	9366, 9367, 22316	12
H	San Luis Dam	15764	17
I	New Melones Dam	14858A, 19304	20
	*Groups A through I	associate a " MAJOR FACILITY " with the	permitted water right
	applications which	authorize diversion of water from a	location for
	service to the	various place of use sub-areas shown	on Map I (attached).

Table II

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C-093660

DECEMBER 01 1986

INTERESTED PARTIES:

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT FOR CONSIDERATION OF PETITIONS BY THE UNITED STATES BUREAU OF RECLAMATION (USBR) TO AMEND 19 WATER RIGHT PERMITS TO DIVERT, STORE AND REDIVERT THE WATERS OF THE SACRAMENTO, TRINITY, AMERICAN, STANISLAUS AND OLD RIVERS AND CLEAR AND STONY CREEKS. (SEE TABLE 1 FOR A COMPLETE LIST OF APPLICATION/PERMIT NUMBERS AS WELL AS SOURCES AND MAJOR FACILITIES INVOLVED.)

The petitions propose that the Board take action to amend the existing water right permits for the listed facilities of the Central Valley Project (CVP) (See Table 1) to:

1. CONSOLIDATE THE CVP PLACES OF USE to allow the USBR to serve sub-areas within the gross (total) CVP service area using CVP facilities which are not now permitted\* (allowed) to serve those sub-areas under one or more existing State water right permits.
2. EXPAND THE PERMITTED PLACES OF USE from approximately 13,000,000 acres (gross) to approximately 17,000,000 acres (gross);

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\*As used in this document, the term "permitted" has a specific meaning. Permitted refers to the water right permits, including the terms and conditions contained in these permits, that are issued by the State Water Resources Control Board to a permittee to divert and use the waters of the State. The water right permit specifies the amount of water that may be diverted for either direct application to use or to storage; the purposes for which the water may be used; the points at which the water may be diverted and rediverted; the season or time of year, specified by month and day, during which the diversions may be made; and the place of use i.e., the geographical area within which the water may be used.

For USBR irrigation uses, a water right permit generally specifies an outer boundary (gross acres) within which water may be used as well as the total number of acres that may be irrigated in any one year (net acres) within that boundary. The geographic location of the net acres may change from year to year without State Board approval as long as the net acres remain within the boundaries defining the gross acreage and the amounts of water used do not exceed those allowed in the water right permit. The term Place of Use refers to the gross boundary.

3. CONFORM THE PURPOSES OF USE so that the uses of water specified in all 19 water right permits covered by the change of use petition will include irrigation, frost protection and heat control, municipal, industrial, domestic, stockwatering, navigation, recreation, fish and wildlife protection and enhancement and water quality (see Table 1 for changes between present and proposed uses); and
4. EXTEND THE TIME ALLOWED IN EXISTING WATER RIGHT PERMITS to complete putting the water to the beneficial uses specified in the water right permits from December 1, 1990 to December 1, 2000.

NOTICE IS HEREBY GIVEN that the State Water Resources Control Board (State Board) will be Lead Agency for the preparation of an Environmental Impact Report (EIR) on the proposed water right permit changes. Your comments on the scope and contents of the proposed EIR are requested.

#### BACKGROUND

The federal CVP, which was initially authorized\*\* and funded through the Rivers and Harbor Act of 1935, has developed over time to include some 20 authorized reservoirs with a combined storage capacity of approximately 11 million acre-feet, and over 500 miles of major canals or aqueducts and other associated facilities. It is the major source of developed water for the Sacramento and San Joaquin Valleys, and the Central Valley service area extends from Trinity Dam and Shasta Lake in the north to areas along the Kern River at the southern end of the San Joaquin Valley. The project was developed primarily for irrigation and each year delivers between 5 and 6 million acre-feet of water to nearly 2 million acres of land. In a normal year, approximately 320,000 acre-feet also are delivered for municipal and industrial purposes. In addition, existing CVP power facilities have an installed capacity (nameplate) of 1,334,000 kW. The CVP diversions under consideration in the proposed action include only those on the Trinity, Sacramento, American and Stanislaus Rivers and on Clear and Stony Creeks and their places of use. The specific water right permits are listed in Table 1. Diversions of the Friant Unit (San Joaquin River) are not being reviewed at this time.

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\*\*Authorized or authorization refers to the Congressional action taken to approve or "authorize" the CVP and its various facilities. Each unit is authorized by a federal statute. The statutory authorization not only covers the features of the project facilities but specifies the purposes for which the project may be used, the area to be served, and other operational and financial conditions.

PROJECT DESCRIPTION

The USBR operates the units of the CVP being considered in the proposed action as an integrated project. Water for many of the places of use are comingled in the Sacramento/San Joaquin Delta. Under this mode of operation, the water supply needs of a specific area may be met from several of the facilities that comprise the CVP. However, the Places of Use, as specified in the existing water right permits for individual facilities, may not allow service to an area which the USBR is now serving or plans in the future to serve using those facilities. If the State Board approves the petitions to consolidate and expand the Places of Use for all the water right permits covered by the petitions it will allow the USBR to provide water service from multiple units of the CVP. The petitions were advertised by the State Board on July 29, 1936.

In petitioning to expand the CVP permitted Place of Use boundaries, the USBR seeks to accomplish several other objectives. The petition states that all the irrigable areas of the Central Valley floor were not included on the original maps that define the Place of Use boundaries in the water right permits and that the CVP has, in some cases, extended water service beyond the boundaries established by any of these permits. To correct this situation, the USBR seeks to consolidate and expand the water right permit Place of Use boundaries to include these serviced but unpermitted areas in all the permits. In addition, the USBR is petitioning to expand service to include new areas not currently served but may be served in the future.

Another effect of consolidation and expansion will be to allow areas within the San Felipe Unit, where the Place of Use is totally covered only by water right permits for the Auburn-Folsom South Unit, to begin receiving water prior to completion of Auburn Dam. In addition, the expanded Place of Use includes anticipated expansion into service areas not presently authorized by Congress. The petitioned time extension would grant the USBR an additional 10 years to complete beneficial use of water under the permits. It also would allow the USBR time to negotiate new water supply contracts for areas not currently served and time to obtain additional future congressional authorization as they believe is necessary.

The petitioned changes are for service areas of the CVP that lie within the Sacramento and San Joaquin Valleys, a corridor extending to the Pacific Ocean through San Benito, Monterey and Santa Cruz Counties, and portions of Santa Clara and Alameda Counties. The facilities involved are listed in Table 1 along with the application/permit numbers, source, season and amount of water diverted and the current and proposed additional Purposes of Use allowed under each permit.

The USBR seeks both to expand the Place of Use of individual water right permits under the consolidation proposal and to add approximately 4,100,000 acres of land to the total existing CVP permitted Place of Use under the permits. Under the expansion proposal, approximately 1,545,500 acres would be added in the Sacramento Valley; 30,300 acres in the Trinity County; 524,100 acres in the coastal corridor and San Francisco Bay Counties; and 1,613,200 acres in the San Joaquin Valley. For a complete county-by-county breakdown, see Table 3. A map showing current and proposed expanded Place of Use boundaries is attached.

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The major rivers that could be affected by the proposed changes include the Trinity, Sacramento, American, Lower San Joaquin, Stanislaus and Old Rivers as well as Clear and Stony Creeks. Permits for CVP facilities on the Trinity, Sacramento and American Rivers and Clear and Stony Creeks currently allow service to only some sub-areas within the San Joaquin Valley. That is, currently not all of these facilities are allowed to serve all of the permitted Place of Use areas within the San Joaquin Valley. Under the petitioned consolidation, this would change; water stored or imported from any of the facilities would be allowed to be served in any sub-area within the new proposed Place of Use.

Facilities on the Stanislaus River are permitted now only to serve areas within the four immediately adjacent counties of Stanislaus, Tuolumne, Calaveras and San Joaquin. The petitioned consolidation would change this. Operation of the Stanislaus River facilities would be integrated with other CVP facilities to serve the total San Joaquin Valley permitted area. In addition all of the above facilities could serve the permitted areas in East and South San Francisco Bay counties as well as areas within the coastal corridor of San Benito, Monterey and Santa Cruz counties.

Maps showing present and proposed Places of Use under the various permits are available for inspection at the State Board. Arrangements can be made to inspect these maps by contacting Ray Dunham at (916) 324-5636.

#### ENVIRONMENTAL EFFECTS

The petitioned changes may result in bringing additional acres of land into agricultural production. The changes also may result in municipal and industrial growth in areas where such growth is now restricted by water supply factors. These changes may aid the commitment of currently uncommitted amounts of water to irrigation and municipal and industrial supply. Changes in current land uses could significantly affect riparian areas, wildlife habitat and survival, wetlands and other natural areas, as well as rare and endangered species populations. Increased agricultural production could add significantly to drainage problems already affecting some areas. Increased Delta pumping rates could affect resources in the Bay/Delta Estuary.

Some of these potential environmental effects can occur only to the extent that additional water is pumped from the Bay/Delta Estuary for delivery in the San Joaquin Valley. Current export rates for the CVP are limited by export pumping capacity and standards set forth in the USBR's water right permits. The USBR has filed separate petitions to increase the amount of water exported from the Delta at the CVP Tracy Pumping Plant and to allow it access to the State Water Project Harvey O. Banks Pumping Plant for the purposes of exporting CVP water. The environmental effects of the point of diversion petitions will be addressed in subsequent actions by the State Board to consider approval of these petitions.

Consolidated operations and conformation of purposes of use could change the operational pattern of individual diversions to the extent that downstream, as well as reservoir fishery resources, riparian and wetland communities and recreation could be affected. The State Board will consider possible amendments to the Trinity River Project permits to mitigate the effects of the proposed action (if any) after completion of the current study being conducted by the U. S. Fish and Wildlife Service and the USBR.

The Board staff has determined that the proposed petition changes could result in significant environmental impacts and that an EIR should be prepared to discuss the impacts and the possible measures or alternatives to avoid or mitigate these impacts.

#### COMMENTS

Two EIR scoping workshops have been scheduled:

- |  |  |
|--|--|
| 1. Red Bluff<br>Department of Water Resources Building<br>2440 Main Street   | Monday, January 5, 1987<br>7:00 p.m.<br>Conference Room    |
| 2. Concord<br>Sheraton Hotel and Conference Center<br>45 John Glenn Drive<br>(Take Highway 680 to Concord Ave. exit) | Wednesday, January 7, 1987<br>7:30 p.m.<br>Sun Valley Room |

Written comments on the scope and contents of the EIR must be postmarked by January 9, 1987 and sent to:

Ray Dunham  
State Water Resources Control Board  
Division of Water Rights  
P. O. Box 2000  
Sacramento, CA 95810

Sincerely,

ORIGINAL SIGNED BY:

Raymond Walsh, Chief  
Division of Water Rights

Attachments

KDOMENY/mairozo  
NOPKD 4001 11/21/86

TABLE 1

PERMITTED APPLICATIONS INVOLVED IN USBR PETITION TO CONSOLIDATE AND EXPAND THE PLACE OF USE  
AND CONFORM PURPOSES OF USE<sup>1</sup> FOR THE FEDERAL CENTRAL VALLEY PROJECT

PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		CURRENTLY PERMITTED PURPOSES OF USE	PROPOSED ADDITIONAL PURPOSES OF USE
		QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON		
12721 (A5626)*	Sacramento River Shasta Dam Delta Mendota Canal	8,000	Jan 1 - Dec 31	3,190,000	Oct 1 - June 30	Irrigation Domestic Stockwatering Navigation Recreation	Frost Protection & Heat Control, Municipal, Industrial, Fish & Wildlife, Water Quality
11967 (A5628)	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	2,500	Jan 1 - Dec 31	1,540,000	Jan 1 - Dec 31	Irrigation Domestic Navigation Salinity Control Flood Control	Frost Protection & Heat Control, Municipal, Industrial, Stockwatering, Recreational, Fish & Wildlife Water Quality
12722 (A9363)	Sacramento River Shasta Dam Delta Mendota Canal	1,000	Jan 1 - Dec 31	310,000	Oct 1 - June 30	Municipal Industrial	Irrigation, Frost Protection & Heat Control, Domestic, Stockwatering, Navigation, Recreation, Fish & Wildlife Protection & Enhancement, and Water Quality
12723 (A9364)	Sacramento River Shasta Dam Delta Mendota Canal	9,000	Jan 1 - Dec 31	1,303,000	Oct 1 - June 30	Irrigation Flood Control, Domestic, Stockwatering, Navigation & Recreation	Frost Protection & Heat Control, Municipal, Industrial, Fish & Wildlife Protection & Enhancement and Water Quality

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C-093666

\*Application Number

<sup>1</sup>The terms "water quality control" and "salinity control" appear in various permits. For the purposes of the conformation petition, it is assumed that salinity control is included as a form of water quality control.

PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		CURRENTLY PERMITTED PURPOSES OF USE	PROPOSED ADDITIONAL PURPOSES OF USE
		QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON		
12725 (A9366)	Rock Slough (Delta) Contra Costa Canal	200	Jan 1 - Dec 31	--	--	Irrigation & Domestic	Frost Protection & Heat Control, Municipal, Industrial, Stockwatering, Navigation, Recreation, Fish & Wildlife Protection & Enhancement, and Water Quality
12726 (A9367)	Rock Slough (Delta) Contra Costa Canal	250	Jan 1 - Dec 31	--	--	Municipal & Industrial	Irrigation, Frost Protection & Heat Control, Domestic, Stockwatering, Navigation, Recreation, Fish & Wildlife Protection and Enhancement, and Water Quality
A-14 12727 (A9368)	Old River (Delta) Delta Mendota Canal	4,000	Jan 1 - Dec 31	--	--	Irrigation & Domestic	Frost Protection & Heat Control, Municipal, Industrial, Stockwatering, Navigation, Recreation, Fish & Wildlife Protection and Enhancement, Water Quality
11315 (A13370)	American River Folsom Dam	8,000	Nov 1 - Aug 1	1,000,000	Nov 1 - July 1	Irrigation, Salinity Control, Flood Control	Frost Protection & Heat Control, Municipal, Industrial, Domestic, Water Quality Stockwatering, Navigation, Recreation, Fish & Wildlife Protection and Enhancement

PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		CURRENTLY PERMITTED PURPOSES OF USE	PROPOSED ADDITIONAL PURPOSES OF USE
		QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON		
11316 (A13371)	American River Folsom Dam	700	Nov 1 - Aug 1	300,000	Nov 1 - July 1	Municipal, Industrial, Domestic, Recreation	Irrigation, Frost Protection & Heat Control, Stockwatering, Navigation, Fish & Wildlife Protection and Enhancement, and Water Quality
16597 (A14858A)	Stanislaus River New Melones Dam	--	--	980,000	Nov 1 - June 30	Irrigation, Domestic, Municipal, Industrial, Recreation, Water Quality, Fish & Wildlife Enhancement	Frost & Heat Protection, Stockwatering, Navigation
11968 (A15374)	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	300	Jan 1 - Dec 31	200,000	Jan 1 - Dec 31	Municipal, Irrigation	Irrigation, Frost Protection & Heat Control, Municipal, Stockwatering, Navigation, Recreation, Fish & Wildlife Protection & Enhancement, and Water Quality
11969 (A15375)	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,700	Jan 1 - Dec 31	1,800,000	Jan 1 - Dec 31	Irrigation, Domestic, Fish & Wildlife Propagation, Navigation, Water Quality Control, and Recreation	Frost Protection & Heat Control, Municipal, Industrial, Stockwatering

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C-093668

PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		CURRENTLY PERMITTED PURPOSES OF USE	PROPOSED ADDITIONAL PURPOSES OF USE
		QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON		
12860 (A15764)	Old River (Delta) San Luis Dam Offstream Storage <sup>1</sup> via Delta Mendota Canal	--	--	1,000,000 <sup>1</sup>	Nov 1 - April 30	Irrigation, Domestic, Stockwatering, Municipal, Industrial, Recreation	Frost Protection & Heat Control, Navigation, Fish & Wildlife Protection & Enhancement, and Water Quality
11971 (A16767)	Trinity River Trinity Dam Lewiston Dam Clear Creek Tunnel Delta Mendota Canal	--	--	700,000	Jan 1 - Dec 31	Irrigation, Domestic, Water Quality Control	Frost Protection & Heat Control, Municipal, Industrial, Navigation, Recreation, Fish & Wildlife Protection & Enhancement Stockwatering
A-16 11973 (A17374)	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,500	Jan 1 - Dec 31	--	--	Irrigation, Domestic, Municipal, Industrial, Salinity Control, Recreation, Fish & Wildlife Enhancement	Frost Protection & Heat Control, Stockwatering, Navigation Water Quality
12364 (A17376)	Clear Creek Whiskeytown Dam Delta Mendota Canal Contra Costa Canal	3,600	Nov 1 - April 1	250,000	Nov 1 - April 1	Irrigation, Domestic, Navigation, Water Quality Control, and Recreation	Frost Protection & Heat Control, Municipal, Industrial, Stockwatering, Fish & Wildlife Protection and Enhancement

<sup>1</sup>The maximum rate of diversion to offstream storage in Permit 12860 (Application 15764) is 4,200 cfs.

PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		CURRENTLY PERMITTED PURPOSES OF USE	PROPOSED ADDITIONAL PURPOSES OF USE
		QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON		
13776 (A18115)	Stony Creek Black Butte Dam Orland South Main Canal Delta Mendota Canal	--	--	160,000	Nov 1 - April 30	Irrigation, Domestic, Municipal, Industrial, Recreation	Frost Protection & Heat Control, Stockwatering, Navigation, Fish & Wildlife Protection & Enhancement, and Water Quality
16600 (A19304)	Stanislaus River New Melones Dam	--	--	1,420,000	Nov 1 - June 30	Irrigation, Domestic, Municipal, Industrial, Recreation, Water Quality, Fish & Wildlife Enhancement	Frost Protection & Heat Control, Stockwatering, Navigation
15735 (A22316)	Rock Slough (Delta) Contra Loma Dam Offstream Storage <sup>2</sup> via Contra Costa Canal	--	--	5,400 <sup>2</sup>	Oct 1 - June 30	Irrigation, Domestic, Municipal, Industrial, Water Quality Control, and Recreation	Frost Protection & Heat Control, Stockwatering, Navigation, Fish & Wildlife Protection and Enhancement

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C-093670

<sup>2</sup>The maximum rate of diversion to offstream storage authorized in Permit 15735 (Application 22316) is 21.16 cfs.



TABLE 3

## CONSOLIDATED AND EXPANDED PLACE OF USE

COUNTY	PRESENT acres	INCREASE acres	EXPANDED acres
TRINITY	95,300	88,300	183,600
SUBTOTAL	95,300	88,300	183,600
SAN JOAQUIN VALLEY			
STANISLAUS	967,000	0	967,000
KERN	995,500	407,000	1,402,500
MERCED	701,900	381,700	1,083,600
FRESNO	1,374,700	358,700	1,733,400
SAN JOAQUIN	905,300	0	905,300
KINGS	586,400	191,600	778,000
MADERA	344,500	145,800	490,300
TULARE	923,300	128,400	1,051,700
CALAVERAS	660,400	0	660,400
TUOLUMNE	1,458,700	0	1,458,700
SUBTOTAL	8,917,700	1,613,200	10,530,900
SAN FRANCISCO BAY AND COAST			
SANTA CLARA	214,200	249,300	463,500
ALAMEDA	290,700	130,300	421,000
SANTA CRUZ	0	63,500	63,500
SAN BENITO	85,500	54,400	139,900
MONTEREY	0	26,600	26,600
CONTRA COSTA	464,700	0	464,700
SUBTOTAL	1,055,100	524,100	1,579,200
SACRAMENTO VALLEY			
TEHAMA	179,500	587,300	766,800
SHASTA	282,000	432,900	714,900
YOLO	293,700	180,700	474,400
GLENN	270,300	133,500	403,800
SACRAMENTO	474,000	110,600	584,600
BUTTE	195,700	107,600	303,300
COLUSA	364,800	103,700	468,500
PLACER	119,100	67,700	186,800
SUTTER	220,100	65,400	285,500
EL DORADO	0	34,800	34,800
YUBA	0	21,300	21,300
SOLANO	533,300	0	533,300
SUBTOTAL	2,932,500	1,845,500	4,778,000
TOTAL	13,000,600	4,071,100	17,071,700

STATE WATER RESOURCES CONTROL BOARD  
 PAUL R. BONDERSON BUILDING  
 Street, Sacramento, CA

DIVISION OF WATER RIGHTS  
 P.O. BOX 2000, Sacramento, CA 95810



NOTICE OF PETITION FOR CHANGES  
 UNDER PERMIT 12721 (APPLICATION 5626)  
 AND 18 OTHERS

Notice is hereby given that on September 24, 1985

The U.S. Bureau of Reclamation  
 2800 Cottage Way, MP-710  
 Sacramento, CA 95825

filed petitions with the State Water Resources Control Board to:

1. Add Clifton Court Forebay as a point of diversion and rediversion in the water right permits of the U.S. Bureau of Reclamation (Bureau) for the federal Central Valley Project (CVP).
2. Remove the 4,600 cubic feet per second (cfs) rate of diversion restriction on pumping through the Delta Mendota Canal (DMC).

The substance of the 19 permits affected by the petitions is summarized in Table 1 (attached).

DESCRIPTION OF PETITIONED ACTIONS:

1. Add a Point of Diversion and Rediversion

Currently the Bureau diverts water from the Sacramento-San Joaquin Delta via an intake channel from a point of diversion within the NE1/4 of SW1/4 of projected Section 29, T1S, R4E, MDB&M using its Tracy Pumping Plant (Tracy Plant) to lift water in the DMC.

The Bureau petitioned the Board to add Clifton Court Forebay intake of the State Water Project (SWP) as a point of diversion and rediversion under the CVP permits listed in Table 1. The Clifton Court Forebay intake is currently located within the NW1/4 of SE1/4 of projected Section 20, T1S, R4E, MDB&M about 11 miles northwest of Tracy. The Forebay acts as a regulatory reservoir at the intake to the Harvey O. Banks Pumping Plant (Banks Plant) of the California Aqueduct. This additional point of diversion and rediversion is operated by the California Department of Water Resources (CDWR). The Forebay intake is about a mile north of the existing point of diversion for the Delta Mendota Canal. Water diverted into Clifton Court Forebay will be pumped through the Banks Plant and conveyed in the California Aqueduct.

The Banks Plant pumps water from Clifton Court Forebay into the main California Aqueduct which conveys the water to the San Joaquin and Santa Clara Valleys and Southern California. The plant is located within the NW1/4 of SW1/4 of Section 35, T1S, R3E, MDB&M or about 10 miles northwest of Tracy in San Joaquin County.

The Bureau has on several occasions contracted with CDWR to pump specific quantities of water for the Bureau during limited periods of time after obtaining permission from the Board. This petition seeks to add permanently the Clifton Court Forebay intake as an additional point of diversion and rediversion under the CVP permits.

2. Remove the 4,600 cubic feet per second (cfs) rate of diversion limitation in Term 2 of Permit 12860 (Application 15764)

Permit 12860 was issued pursuant to Board Decision 1020 dated June 30, 1961. Decision 1020 contains the following condition: "2. The maximum rate of diversion through the Delta-Mendota Canal under this permit, together with other rights of permittee, shall not exceed 4,600 cubic feet per second." Because of an increase in pumping capacity at the Tracy Pumping Plant and because of the proposed addition of the Banks Pumping Plant as a point of diversion, the Bureau will have additional capacity which it wishes to use. The requested removal of the limitation on pumping will allow the Bureau to utilize fully the flow capacity of the Delta Mendota Canal and also use any unused capacity in the California Aqueduct. The Bureau claims that addition of the point of diversion and removal of the rate of diversion limit are necessary for the coordinated operation of the SWP and CVP.

#### RELATIVE TO PROTESTS

Protests may be based on possible injury to prior rights or an allegation that the proposed changes to the various appropriations would not be within the Board's jurisdiction, would not be in the public interest, would have an adverse environmental impact, would result in waste, unreasonable method of use, or unreasonable method of diversion, would impair public trust uses, or would be contrary to law.

#### FORMS UPON WHICH TO SUBMIT PROTESTS WILL BE SUPPLIED FREE UPON REQUEST

Any person desiring to protest the granting of the petitioned actions shall within 45 days from date hereof file a written protest with the Division of Water Rights, P. O. Box 2000, Sacramento, CA 95810. The protestant shall send a copy of any protest to the petitioner. Any protest shall clearly set forth the protestant's objections to the petitioned actions and shall be on the forms provided by the Board. These forms are available from the Board upon request. Protests regarding uses currently allowed under the permits or regarding issues unrelated to the petitioned changes will not be accepted.

If a protestant's right to water is junior in priority to that of the petitioner and/or the protest is based on injury to one of the above listed public resources, a complete statement of facts supporting the allegation that

the petitioned actions are adverse to the protestant and/or the public resource must be included. Questions concerning this petition may be directed to Dave Cornelius at (916) 324-5685.

*Raymond Walsh*  
Raymond Walsh, Chief  
Division of Water Rights

Dated: DEC 19 1986  
Sacramento, California

Attachments

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TABLE I

SHEET 1 OF 3

PERMITTED APPLICATIONS INVOLVED IN USBR PETITION TO CONSOLIDATE AND EXPAND THE PLACE OF USE  
AND CONFORM PURPOSES OF USE FOR THE FEDERAL CENTRAL VALLEY PROJECT

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
5626	12721	Sacramento River Shasta Dam Delta Mendota Canal	8,000	Jan 1 to Dec 31	3,190,000	Oct 1 to Jun 30	Irrigation, domestic stockwatering, navigation & recreation
5628	11967	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	2,500	Jan 1 to Dec 31	1,540,000	Jan 1 to Dec 31	Irrigation, domestic navigation, salinity control & flood control
9363	12722	Sacramento River Shasta Dam Delta Mendota Canal	1,000	Jan 1 to Dec 31	310,000	Oct 1 to Jun 30	Municipal & industrial
9364	12723	Sacramento River Shasta Dam Delta Mendota Canal	9,000	Jan 1 to Dec 31	1,303,000	Oct 1 to Jun 30	Irrigation, flood control, domestic, stockwatering, navigation & recreation
9366	12725	Rock Slough (Delta) Contra Costa Canal	200	Jan 1 to Dec 31	--	--	Irrigation & domestic
9367	12726	Rock Slough (Delta) Contra Costa Canal	250	Jan 1 to Dec 31	--	--	Municipal & industrial
9368	12727	Old River (Delta) Delta Mendota Canal	4,000	Jan 1 to Dec 31	--	--	Irrigation & domestic
13370	11315	American River Folsom Dam	8,000	Nov 1 to Aug 1	1,000,000	Nov 1 to July 1	Irrigation salinity control & flood control

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C-093676

C-093676

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
13371	11316	American River Folsom Dam	700	Nov 1 to Aug 1	300,000	Nov 1 to July 1	Municipal, industrial, domestic & recreation
14858A	16597	Stanislaus River New Melones Dam	--	--	980,000	Nov 1 to June 30	Irrigation, domes- tic, municipal, industrial, recrea- tion, water qual- ity, fish & wild- life enhancement
15374	11968	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	300	Jan 1 to Dec 31	200,000	Jan 1 to Dec 31	Municipal & industrial
15375	11969	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,700	Jan 1 to Dec 31	1,800,000	Jan 1 to Dec 31	Irrigation, domes- tic, fish & wild- life propagation, navigation, water quality control & recreation
15764	12860	Old River (Delta) San Luis Dam Offstream Storage* via Delta Mendota Canal			1,000,000*	Nov 1 to Apr 30	Irrigation, domes- tic, stockwatering municipal, industri- al & recreation
16767	11971	Trinity River Trinity Dam Lewiston Dam Clear Creek Tunnel Delta Mendota Canal	--	--	700,000	Jan 1 to Dec 31	Irrigation, domestic & water quality control

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C-093677

APPLICATION NO.	PERMIT NO.	SOURCE/ MAJOR FACILITIES	DIRECT DIVERSION		STORAGE		PURPOSE
			QUANTITY (CFS)	SEASON	QUANTITY (AF)	SEASON	
17374	11973	Trinity River Trinity Dam Lewiston Dam Spring Creek Tunnel Delta Mendota Canal	1,500	Jan 1 to Dec 31	--	--	Irrigation, domestic, municipal, industrial, salinity control, recreation, fish & wildlife enhancement
17376	12364	Clear Creek Whiskeytown Dam Delta Mendota Canal Contra Costa Canal	3,600	Nov 1 to Apr 1	250,000	Nov 1 to Apr 1	Irrigation, domestic, navigation, water quality control & recreation
18115	13776	Stony Creek Black Butte Dam Orland South Main Canal Delta Mendota Canal	--	--	160,000	Nov 1 Apr 30	Irrigation, domestic, municipal, industrial, recreation
19304	16600	Stanislaus River New Melones Dam	--	--	1,420,000	Nov 1 to June 30	Irrigation, domestic, municipal, industrial, recreation, water quality, fish & wildlife enhancement
22316	15735	Rock Slough (Delta) Contra Loma Dam Offstream Storage** via Contra Costa Canal	--	--	5,400**	Oct 1 to Jun 30	Irrigation, domestic, municipal, industrial, water quality control & recreation

\* The maximum rate of diversion to offstream storage in Permit 12860 (Application 15764) is 4,200 cfs

\*\* The maximum rate of diversion to offstream storage authorized in Permit 15735 (Application 22316) is 21.16 cfs.

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C-093678

C-093678

APPENDIX B

# Water Contractor Information

Table Number	Table Name	Page Number
B-1	Land Use and Water Supply Characteristics for CVP Water Contractors	B-1 to B-4
B-2	Shasta Division - Shasta Unit Miscellaneous Water Contractors Water Supply Characteristics	B-5 to B-7

**Table B-1  
Land Use and Water Supply Characteristics for CVP Water Contractors**

<b>CVP Water Contractor</b>	<b>Acreage in CVP Water Contractor Boundaries<sup>a</sup></b>	<b>Acre-Feet of Water<sup>b</sup></b>
Arvin-Edison Water Storage District	132,847	40,000 Class 2: 311,675
Avenal Community Services District	46,230	3,500
Banta-Carbona Irrigation District	18,345	25,000
Bella Vista Water District	33,836	24,000
Broadview Water District	9,704	27,000
California Department of Fish and Game	N/A <sup>c</sup>	3,130
California, State of	N/A	12,000
Casper-Traction Ranch	3,499	2,080
Centinella Water District	879	2,500
Central San Joaquin Water Conservation District	N/A	80,000
Chowchilla Water District	79,909	55,000 Class 2: 160,000
Clear Creek Community Services District	11,725	15,300
Coalinga, City of	106,608	10,000
Colusa County	N/A	60,040
Colusa County Water District	45,862	62,200
Colusa Drain MWC	N/A	100,000
Contra Costa Water District, Schedule A, B, and C.	115,239	195,000
Corning Water District	13,089	25,300
Davis Water District	N/A	10,500
Del Puerto Water District	4,505	12,060
Delano-Earlimart Irrigation District	56,612	108,800 Class 2: 74,500
Ducor Irrigation District	10,647	400
Dunnigan Water District	10,749	19,000
Eagle Field Water District	1,438	4,550
East Bay Municipal Utility District	198,400	150,000
Elder Creek Water District	3,658	4,600
El Dorado Irrigation District	136,611	30,500
El Dorado Irrigation District and Water Agency	N/A	4,300
El Dorado Irrigation District - Lake Hills Estate	N/A	50
Elk Creek Community Services District	N/A	100
Exeter Irrigation District	14,945	11,500 Class 2: 19,000
Foothill Water District	3,462	10,840
Forestall Public Utility District	13,143	2,800
Fresno, City of	N/A	60,000
Fresno County Water District No. 18	252	150
Fresno County	N/A	3,000
Fresno Irrigation District	247,866	60,000
Fresno Slough Water District	1,316	4,000

**Table B-1  
Land Use and Water Supply Characteristics for CVP Water Contractors**

<b>CVP Water Contractor</b>	<b>Acreage in CVP Water Contractor Boundaries<sup>a</sup></b>	<b>Acre-Foot of Water<sup>b</sup></b>
Garfield Water District	1,812	3,500
Glide Water District	9,434	10,500
Gravelly Ford Water District - Class 2	8,430	14,000
Hills Valley Irrigation District	4,098	3,346
Hospital Water District	13,398	34,105
Melvin D. Mardella Hughes	N/A	70
Huron, City of	N/A	3,000
International Water District	724	1,200
Ivanhoe Irrigation District	10,951	7,700 Class 2: 7,900
James Irrigation District	26,209	35,300
Kanawha Water District	15,958	45,000
Kern Cañon Water District	3,175	7,700
Kern-Tulare Water District	22,110	40,000
Kirkwood Water District	1,151	2,100
La Grande Water District	1,478	5,000
Laguna Water District	607	800
Lewis Creek Water District	1,296	1,450
Lindmore Irrigation District	27,669	33,000 Class 2: 22,000
Lindsay, City of	16,094	2,500
Lindsay-Strathmore Irrigation District	15,000	27,500
Louisiana Pacific Corp.	N/A	25
Lower Tule River Irrigation District	103,301	92,302
Madera, County of	N/A	200
Madera Irrigation District	130,704	109,000 Class 2: 186,000
Mercy Springs Water District	3,589	13,300
Mountain Gate Community Services District	5,580	350
Mustang Water District	6,252	14,680
Napa County Flood Control and Water Conservation District	N/A	7,500
Orange Cove, City of	N/A	1,400
Orange Cove Irrigation District	29,276	39,200
Orestimba Water District	6,189	15,860
Orland-Artois Water District	31,124	53,000
Oro Loma Water District	1,095	4,600
Pacheco Water District DMC, SLU	4,765	14,580
Panoche Water District DMC, SLC	39,937	94,000
Patterson Water District	14,366	16,500
Pixley Irrigation District	69,974	31,102
Placer County Water Agency	896,000	117,000

**Table B-1  
Land Use and Water Supply Characteristics for CVP Water Contractors**

<b>CVP Water Contractor</b>	<b>Acreage in CVP Water Contractor Boundaries<sup>a</sup></b>	<b>Acre-Feet of Water<sup>b</sup></b>
Plain View Water District	6,961	20,600
Porterville Irrigation District	17,034	16,000 Class 2: 30,000
Proberta Water District	2,974	5,500
Quinto Water District	3,223	8,620
Rag Gulch Irrigation District	6,005	13,300
Reclamation District No. 1606	360	228
Redding, City of (Buckeye)	32,787	6,140
Romero Water District	1,517	5,690
Roseville, City of	N/A	32,000
Sacramento, City of	N/A	90,000
Sacramento Municipal Utility District	2,830	75,000
Salado Water District	3,024	9,130
San Benito County Water District	960,000	43,800
San Juan Suburban Water District	29,694	11,200
San Luis Water District DMC, SLU	64,958	125,080
Santa Barbara County Water Agency	N/A	32,000
Santa Clara Valley Water District	849,000	152,500
Saucelito Irrigation District	19,825	238,000
Shafter-Wasco Irrigation District	38,831	50,000 Class 2: 39,600
Shasta Community Services District	7,090	1,000
Shasta County Water Agency	2,457,600	5,000
Shasta Dam Area Public Utility District	3,828	2,750
Shasta Division - Shasta Unit Miscellaneous Water Contractors <sup>a</sup>	68,727	248,992
Solano County Flood Control and Water Conservation District	83,024	N/A
Southern San Joaquin Municipal Utility District	59,937	21,200
California, State of	N/A	12,000
Stockton-East Water District	110,601	75,000
Stone Corral Irrigation District	6,881	32,800
Stony Creek	2,523	2,920
Sunflower Water District	7,178	16,625
Tea Pot Dome Water District	3,601	7,500
Tehama Water District	130	400
Terra Bella Irrigation District	13,912	97,000
The West Side Irrigation District	10,924	7,500
Thomes Creek Water District	3,122	8,400
Tracy, City of	N/A	10,000
Tranquillity Irrigation District	10,592	20,200
Tri-Valley Water District	4,560	1,142

Table B-1 Land Use and Water Supply Characteristics for CVP Water Contractors		
CVP Water Contractor	Acreage in CVP Water Contractor Boundaries <sup>a</sup>	Acre-Feet of Water <sup>b</sup>
Tulare County	N/A	3,000
Tulare Irrigation District	71,000	50,000
USDA Forest Service	N/A	10
Westlands Water District, MP, SLC	605,548	1,150,000
Westside Water District	16,878	25,000
West Stanislaus Irrigation District	24,733	50,000
Windren Water District	881	2,990
4-E Water District	1,786	80
<b>Total</b>	<b>8,457,211</b>	<b>4,915,867</b> Class 2: 850,675

<sup>a</sup>CVP water is not delivered to all lands within the CVP water contractor boundaries.  
<sup>b</sup>For the Shasta Division - Shasta Unit Miscellaneous Water Contractors, the total supply (project water plus base supply) is provided. For all other water contractors, only the project water is shown.  
<sup>c</sup>N/A = Data not available.  
<sup>d</sup>For a complete listing of Shasta Division - Shasta Unit Miscellaneous Water Contractors, see Table B-2.

Table B-2 Shasta Division - Shasta Unity Miscellaneous Water Contractors Water Supply Characteristics			
Shasta Division Shasta Unit Miscellaneous Water Contractors	Project Water <sup>a</sup> Amount (acre-feet)	Base Supply <sup>b</sup> Amount (acre-feet)	Total Water Supply <sup>c</sup> (acre-feet)
Amen	200	460	660
Anderson Farms	90	80	170
Anderson, Ray	88	149	237
Arnold	55	40	95
Andreotti	1,560	2,060	3,620
Beckley, Ralph	135	165	300
Butler	280	180	460
Cannell	210	680	890
Carter	0	1,470	1,470
Chaplin	2,000	8,070	10,070
Chesney	390	310	700
Chicago Almond	570	210	780
Chrislieb	13	9	22
Clark	20	190	210
Clauss	0	4,040	4,040
Collier	120	60	180
Colusa Properties	0	940	940
Cribari	27	8	35
Daniele	7	13	20
Davis	9,800	22,000	31,800
Davis	14	71	85
Dean	485	385	870
Deseret Farms	0	4,000	4,000
Diamond International	290	220	510
Driscoll Strawberry	490	330	820
Driver	22	8	30
Driver, John	6	10	16
Eggleston	12	53	65
Ehrke	160	220	380
Fargo	710	2,450	3,160
Fong Sacramento Fruit Ranch	230	520	750
Forry	0	2,285	2,285
Frangos	20	75	95
Freeman	19	11	30
Furlan	200	1,300	1,500
Furlan, Emile	350	570	920
German	4	8	12
Gillaspy	90	120	210
Guisti, A.	310	190	500
Guisti, F.	760	850	1,610

**Table B-2  
Shasta Division - Shasta Unity Miscellaneous Water Contractors Water Supply Characteristics**

<b>Shasta Division Shasta Unit Miscellaneous Water Contractors</b>	<b>Project Water<sup>a</sup> Amount (acre-feet)</b>	<b>Base Supply<sup>b</sup> Amount (acre-feet)</b>	<b>Total Water Supply<sup>c</sup> (acre-feet)</b>
Green Island Farms	470	350	820
Griffin	1,150	1,610	2,760
Hale, Judith	17	58	75
Hale, Judith	13	117	130
Harman, Mabel	20	110	130
Hanks	250	370	620
Henle	0	935	935
Hershey	450	2,570	3,020
Hiatt	750	1,320	2,070
High Low Nursery	135	70	205
Howald	1,410	1,350	2,760
Hunter	200	1,410	1,610
Huston	50	470	520
Hyman	325	555	880
Kaiser Development Corp.	85	460	545
Kary, Carol	600	400	1,000
Krejca, Lee	12	24	36
Lamb, Clifton	340	180	520
Latter Day Saints	0	630	630
Lauppe, B.	230	720	950
Lauppe, H.	480	380	860
Leal, Robert	410	220	630
Leiser, W.	24	36	60
Lewis	2,630	3,630	6,260
Lovich, Paul	70	80	150
Lovvorn	150	1,920	2,070
M&T Inc.	976	16,980	17,956
MCM Properties	610	860	1,470
Martin, A.	130	280	410
Mayfair Farms Inc.	10	270	280
McLane, Robert	23	17	40
McLaughlin, J.	220	430	650
Micke, Daniel	19	81	100
Morehead, J.	140	115	255
Morey, Richard	60	55	115
Moroni, P.	80	150	230
Munson, James	85	78	163
Munson, Nita	55	75	130
Nelson, T.	98	38	136
Newball Land and Farming	700	6,410	7,110
Oji Brothers	1,860	1,340	3,200

Table B-2 Shasta Division - Shasta Unity Miscellaneous Water Contractors Water Supply Characteristics			
Shasta Division Shasta Unit Miscellaneous Water Contractors	Project Water <sup>a</sup> Amount (acre-feet)	Base Supply <sup>b</sup> Amount (acre-feet)	Total Water Supply <sup>c</sup> (acre-feet)
Oji, Mansanobu	1,310	3,430	4,740
Penner, H. H.	21	159	180
Pirea, L.	435	485	920
Ramos, M.	5	11	16
Ramsey, B.	30	470	500
Reel, C. L.	20	180	200
Reische, C.	320	120	440
Richter, H.	1,030	1,750	2,780
Ritchey, E. J.	40	150	190
River Garden Farms	500	29,300	29,800
Russell, C.	34	86	120
Russell, C. and D.	60	370	430
Safor Corp.	345	355	700
Seaver, Helen	260	200	460
Stafford, H.	440	715	1,155
Stanghellini	200	360	560
Steidmayer	700	610	1,310
Thompson, M.	100	80	180
Title Insurance & Trust	336	920	1,256
Tomlinson	1,000	1,700	2,700
Tuttle, C.	270	120	390
University of California	200	860	1,060
Van Ruiten, Jr.	195	320	515
Van Ruiten, Sr.	275	50	325
Verona Farming Partnership	120	180	300
Wallace Construction	960	2,680	3,640
Wells	300	1,515	1,815
Westfall, R.	45	445	490
Wilber	634	2,170	2,804
Williams Co., G.W.	130	80	210
Wilson, N.	80	50	130
Woodland Farms	672	50,190	50,862
Yerxa, Max	16	20	36
Young, Russell	8	2	10
Zumwalt Orchards, Inc.	100	630	730
<b>Total</b>	<b>46,265</b>	<b>202,727</b>	<b>248,992</b>

<sup>a</sup>Project Water = Water developed from storage in CVP facilities.  
<sup>b</sup>Base Supply = Water delivered as a result of water rights settlements.  
<sup>c</sup>Total Water Supply - Project Water + Base Supply.

APPENDIX C

# Fish Species Lists

Table Number	Table Name	Page Number
C-1	Representative Fish Species	C-1
C-2	Representative Fish Species of the Lower American River	C-3
C-3	Representative Fish Species of the Delta	C-4

**Table C-1  
Representative Fish Species of the Sacramento River**

Common Name	Scientific Name
<b>NATIVE SPECIES</b>	
Anadromous-game White sturgeon Green sturgeon Chinook salmon Steelhead trout	<i>Acipenser transmontanus</i> <i>Acipenser medirostris</i> <i>Oncorhynchus tshawytscha</i> <i>O. mykiss</i>
Anadromous-nongame Pacific lamprey River lamprey Pacific brook lamprey	<i>Lampetra tridentata</i> <i>Lampetra ayresi</i> <i>Lampetra pacifica</i>
Resident-game Rainbow trout	<i>Salmo gairdneri</i>
Resident-nongame Delta smelt Sacramento blackfish Hardhead Hitch Sacramento squawfish Sacramento splittail California roach Speckled dace Sacramento sucker Mosquitofish Tule perch Coastrange sculpin Prickly sculpin Riffle sculpin Crayfish	<i>Hypomesus transpacificus</i> <i>Orthodon microlepidotus</i> <i>Mylopharodon conocephalus</i> <i>Lavinia exilicauda</i> <i>Ptychocheilus grandis</i> <i>Pogonichthys macrolepidotus</i> <i>Hesperoleucus symmetricus</i> <i>Rhinichthys osculus</i> <i>Catostomus occidentalis</i> <i>Gambusia affinis</i> <i>Hysterocarpus traskii</i> <i>Cottus aleuticus</i> <i>Cottus asper</i> <i>Cottus gulosus</i> <i>Pacifastacus leniusculus</i>
<b>INTRODUCED SPECIES</b>	
Anadromous-game American shad Striped bass	<i>Alosa sapidissima</i> <i>Morone saxatilis</i>
Resident-game Brown trout Channel catfish White catfish Yellow bullhead Brown bullhead Black bullhead Black crappie White crappie Green sunfish Bluegill Redear sunfish Largemouth bass Smallmouth bass	<i>Salmo trutta</i> <i>Ictalurus punctatus</i> <i>Ictalurus catus</i> <i>Ictalurus natalis</i> <i>Ictalurus nebulosus</i> <i>Ictalurus melas</i> <i>Pomoxis nigromaculatus</i> <i>Pomoxis annularis</i> <i>Lepomis cyanellus</i> <i>Lepomis macrochirus</i> <i>Lepomis microlophus</i> <i>Micropterus salmoides</i> <i>Micropterus dolomieu</i>

**Table C-1  
Representative Fish Species of the Sacramento River**

Resident-nongame	
Treadfin shad	<i>Dorosoma petenense</i>
Carp	<i>Cyprinus carpio</i>
Goldfish	<i>Carassius auratus</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Red shiner	<i>Notropis lutrensis</i>
Fathead minnow	<i>Pimephales promelas</i>
Tahoe sucker	<i>Catostomus tahoensis</i>
Mosquitofish	<i>Gambusia affinis</i>
Mississippi silverside	<i>Menidia audens</i>
Threespine stickleback	<i>Gasterosteus aculeatus</i>
Bigscale logperch	<i>Percina macrolepida</i>
Yellowfin goby	<i>Acanthogobius flavimanus</i>
Asian clam	<i>Corbicula fluminea</i>

**Table C-2  
Representative Fish Species of the Lower American River**

Common Name	Scientific Name	Status
<b>ANADROMOUS GAME FISH</b> Chinook (king) salmon Coho (silver) salmon Pink salmon Chum salmon White sturgeon Striped bass American shad Steelhead rainbow trout	<i>Oncorhynchus tshawytscha</i> <i>Oncorhynchus kisutch</i> <i>Oncorhynchus gorbuscha</i> <i>Oncorhynchus keta</i> <i>Acipenser transmontanus</i> <i>Morone saxatilis</i> <i>Alosa sapidissima</i> <i>Salmo gairdneri</i>	Numerous in fall Occasional Rare Rare Uncommon Numerous in summer Numerous in spring Numerous
<b>COLDWATER GAME FISH</b> Kokanee salmon Rainbow trout Brown trout	<i>Oncorhynchus nerka kennerlyi</i> <i>Salmo gairdneri</i> <i>Salmo trutta</i>	Strays downstream from Nimbus Numerous Rare
<b>WARMWATER GAME FISH</b> Largemouth bass Smallmouth bass Green sunfish Bluegill Redear sunfish White crappie Channel catfish White catfish Brown bullhead Black bullhead	<i>Micropterus salmoides</i> <i>Micropterus dolomieu</i> <i>Lepomis cyanellus</i> <i>Lepomis macrochirus</i> <i>Lepomis microlophus</i> <i>Pomoxis annularis</i> <i>Ictalurus punctatus</i> <i>Ictalurus catus</i> <i>Ictalurus nebulosus</i> <i>Ictalurus melas</i>	Common in backwaters Common in backwaters Common in backwaters Common in backwaters Few in backwaters Few in backwaters Uncommon Common in backwaters Few in backwaters Few in backwaters
<b>NONGAME FISH</b> Sacramento sucker Carp Goldfish Sacramento blackfish Hardhead Sacramento hitch Sacramento squawfish Splittail Mosquitofish Tule perch Riffle sculpin Pacific lamprey Threadfin shad Golden shiner Fathead minnow Thicktail chub Western roach Sacramento tui chub Speckled dace	<i>Catostomus occidentalis</i> <i>Cyprinus carpio</i> <i>Carassius auratus</i> <i>Orthodon microlepidotus</i> <i>Mylopharodon conocephalus</i> <i>Lavinia exilicauda</i> <i>Ptychocheilus grandis</i> <i>Pogonichthys macrolepidotus</i> <i>Gambusia affinis</i> <i>Hysterocarpus traskii</i> <i>Cottus gulosus</i> <i>Lampetra tridentata</i> <i>Dorosoma petenense</i> <i>Notemigonus crysoleucas</i> <i>Pimephales promelas</i> <i>Gila crassicauda</i> <i>Hesperoleucus symmetricus</i> <i>Gila bicolor</i> <i>Rhinichthys osculus</i>	Numerous Numerous Numerous Uncommon Occasional Occasional Numerous Occasional Numerous in backwaters Numerous Numerous Common and anadromous Occasional Present above Nimbus Present above Nimbus Very rare (possibly extinct) Uncommon Uncommon Uncommon

Table C-3 Representative Fish Species of the Delta	
Common Name	Scientific Name
<b>NATIVE SPECIES</b> Anadromous-nongame Pacific lamprey Pacific brook lamprey	<i>Lampetra tridentata</i> <i>Lampetra pacifica</i>
Anadromous-game White sturgeon Rainbow trout (steelhead) Chinook salmon American shad Striped bass	<i>Acipenser transmontanus</i> <i>Salmo gairdneri</i> <i>Oncorhynchus tshawytscha</i> <i>Alosa sapidissima</i> <i>Morone saxatilis</i>
Resident-nongame Delta smelt Sacramento blackfish Hardhead Hitch Sacramento squawfish California roach Speckled dace Sacramento sucker Sacramento splittail Tule perch Prickly sculpin Riffle sculpin Threadfin shad Carp Goldfish Golden shiner Red shiner Splittail Inland silverside Mississippi silverside Fathead minnow Mosquitofish Threespine stickleback Bigscale logperch	<i>Hypomesus transpacificus</i> <i>Orthodon microlepidotus</i> <i>Mylopharodon conocephalus</i> <i>Lavinia exilicauda</i> <i>Ptychocheilus grandis</i> <i>Hesperoleucus symmetricus</i> <i>Rhinichthys osculus</i> <i>Catostomus occidentalis</i> <i>Pogonichthys macrolepidotus</i> <i>Hysterothorax traskii</i> <i>Cottus asper</i> <i>Cottus gulosus</i> <i>Dorosoma petenense</i> <i>Cyprinus carpio</i> <i>Carassius auratus</i> <i>Notemigonus crysoleucas</i> <i>Notropis lutrensis</i> <i>Pogonichthys macrolepidotus</i> <i>Menidia beryllina</i> <i>Menidia audens</i> <i>Pimephales promelas</i> <i>Gambusia affinis</i> <i>Gasterosteus aculeatus</i> <i>Percina macrolepida</i>
Resident-game Channel catfish White catfish Blue catfish Brown bullhead Black bullhead White crappie Black crappie Warmouth Green sunfish Bluegill Redear sunfish Pumpkinseed Largemouth bass Smallmouth bass Spotted bass White bass Brown trout	<i>Ictalurus punctatus</i> <i>Ictalurus catus</i> <i>Ictalurus furcatus</i> <i>Ictalurus nebulosus</i> <i>Ictalurus melas</i> <i>Pomoxis annularis</i> <i>Pomoxis nigromaculatus</i> <i>Lepomis gulosus</i> <i>Lepomis cyanellus</i> <i>Lepomis macrochirus</i> <i>Lepomis microlophus</i> <i>Lepomis gibbosus</i> <i>Micropterus salmoides</i> <i>Micropterus dolomieu</i> <i>Micropterus punctulatus</i> <i>Morone chrysops</i> <i>Salmo trutta</i>

APPENDIX D

# Vegetation and Wildlife Species Lists

Table Number	Table Name	Page Number
D-1	Habitats and their Associated Common Vegetation and Wildlife Species	D-1
D-2	Habitats Identified and Special-Status Plant and Animal Species Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred	D-8

Table D-1 Habitats and their Associated Common Vegetation and Wildlife Species		
Habitat	Common Name	Scientific Name
Alkali Scrub	<b>Vegetation</b>	
	Alkali goldenbush	<i>Haplopappus aradenius</i>
	Kochia species	<i>Kochia spp.</i>
	Iodine bush	<i>Allenrolfea occidentalis</i>
	Alkali blite	<i>Suaeda moquini</i>
	Salt bush species	<i>Atriplex spp.</i>
	Alkali weed	<i>Cressa truxillensis</i>
	Alkali heliotrope	<i>Heliotropium curassavicum</i>
	Alkali sacaton	<i>Sporobolus airoides</i>
	Saltgrass	<i>Distichlis spicata</i>
	<b>Wildlife</b>	
	Western spadefoot	<i>Scaphiopus hammondi</i>
	Western toad	<i>Bufo boreas</i>
	Desert cottontail	<i>Sylvilagus audubonii</i>
	Black-tailed hare	<i>Lepus californicus</i>
	Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
	Southern grasshopper mouse	<i>Onychomys torridus</i>
	Coyote	<i>Canis latrans</i>
	Side-blotched lizard	<i>Uta stansburiana</i>
	Western whiptail	<i>Cnemidophorus tigris</i>
Glossy snake	<i>Arizona elegans</i>	
Gopher snake	<i>Pituophis melanoleucus</i>	
Coachwhip	<i>Masticophis flagellum</i>	
Annual Grassland	<b>Vegetation</b>	
	Wild oats	<i>Avena fatua</i>
	Soft chess	<i>Bromus mollis</i>
	Ripgut brome	<i>Bromus rigidus</i>
	Red brome	<i>Bromus rubens</i>
	Wild barley	<i>Hordeum leporinum</i>
	Foxtail fescue	<i>Festuca megalura</i>
	Filaree species	<i>Erodium spp.</i>
	Clover species	<i>Trifolium spp.</i>
	California poppy	<i>Eschscholzia californica</i>
	Popcorn flower	<i>Plagiobothrys torreyi</i>
	<b>Wildlife</b>	
	Western spadefoot	<i>Scaphiopus hammondi</i>
	Western toad	<i>Bufo boreas</i>
	Pacific treefrog	<i>Hyla regilla</i>
	Ornate shrew	<i>Sorex ornatus</i>
	Desert cottontail	<i>Sylvilagus audubonii</i>
	Black-tailed hare	<i>Lepus californicus</i>
	California ground squirrel	<i>Spermophilus beecheyi</i>
	Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
California kangaroo rat	<i>Dipodomys californicus</i>	

Table D-1 Habitats and their Associated Common Vegetation and Wildlife Species		
Habitat	Common Name	Scientific Name
Annual Grassland (continued)	<b>Wildlife</b>	
	Western harvest mouse	<i>Reithrodontomys megalotis</i>
	Deer mouse	<i>Peromyscus maniculatus</i>
	California vole	<i>Microtus californicus</i>
	Long-tailed weasel	<i>Mustela frenata</i>
	Western skink	<i>Eumeces skiltonianus</i>
	Gilbert's skink	<i>Eumeces gilberti</i>
	Gopher snake	<i>Pituophis melanoleucus</i>
	Common kingsnake	<i>Lampropeltis getulus</i>
	Western rattlesnake	<i>Crotalus viridis</i>
	<b>Vernal Pool</b>	
	Downingia	<i>Downingia concolor</i>
	Hedge-Hyssop	<i>Gratiola ebracteata</i>
	Rush species	<i>Juncus spp.</i>
	Meadowfoam	<i>Limnanthes douglasii</i>
	Monkey flower	<i>Mimulus guttatus</i>
	Navarretia	<i>Navarretia intertexta</i>
	Allocarya species	<i>Allocarya spp.</i>
	Brodiaea species	<i>Brodiaea spp.</i>
	Spikerush	<i>Eleocharis palustris</i>
	Button celery	<i>Apium armatum</i>
	Fresh Emergent Wetland	<b>Vegetation</b>
Big leaf sedge		<i>Carex amplifolia</i>
Baltic rush		<i>Juncus balticus</i>
Saltgrass		<i>Distichlis spicata</i>
Cattail		<i>Typha latifolia</i>
Tule bulrush		<i>Scirpus acutus</i>
River bulrush		<i>Scirpus fluviatilis</i>
<b>Wildlife</b>		
Western toad		<i>Bufo boreas</i>
Pacific treefrog		<i>Hyla regilla</i>
California myotis		<i>Myotis californicus</i>
Brazilian free-tailed bat		<i>Tadarida brasiliensis</i>
Western harvest mouse		<i>Reithrodontomys megalotis</i>
Deer mouse		<i>Peromyscus maniculatus</i>
California vole		<i>Microtus californicus</i>
Raccoon		<i>Procyon lotor</i>
Common kingsnake		<i>Lampropeltis getulus</i>
Common garter snake		<i>Thamnophis sirtalis</i>
Scrub oak		<i>Quercus dumosa</i>
Chaparral oak species		<i>Quercus spp.</i>
Ceanothus species		<i>Ceanothus spp.</i>
Manzanita species		<i>Arctostaphylos spp.</i>
Chamise		<i>Adenostoma fasciculatum</i>
Mahogany species		<i>Melia spp.</i>

**Table D-1  
Habitats and their Associated Common Vegetation and Wildlife Species**

<b>Habitat</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Fresh Emergent Wetland (continued)</b>	<b>Wildlife</b>	
	Silk-tassel species	<i>Carrya spp.</i>
	Toyon	<i>Heteromeles arbutifolia</i>
	Yerba santa	<i>Eriodictyon californica</i>
	California buckeye	<i>Aesculus californica</i>
	Poison oak	<i>Rhus diversiloba</i>
	Sumac species	<i>Rhus spp.</i>
	<b>Wildlife</b>	
	Ensatina	<i>Ensatina eschscholtzii</i>
	Arboreal salamander	<i>Aneides lugubris</i>
	Western toad	<i>Bufo boreas</i>
	Western spadefoot	<i>Scaphiopus hammondi</i>
	Myotis species	<i>Myotis spp.</i>
	Western pipistrelle	<i>Pipistrellus hesperus</i>
	Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
	Desert cottontail	<i>Sylvilagus audubonii</i>
	Black-tailed hare	<i>Lepus californicus</i>
	Sonoma chipmunk	<i>Tamias sonomae</i>
	Merriam's chipmunk	<i>Tamias merriami</i>
	California pocket mouse	<i>Perognathus californicus</i>
	Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
	California kangaroo rat	<i>Dipodomys californicus</i>
	Pinyon mouse	<i>Peromyscus truei</i>
	Desert woodrat	<i>Neotoma lepida</i>
	Gray fox	<i>Urocyon cinereoargenteus</i>
	Red fox	<i>Vulpes vulpes</i>
	Bobcat	<i>Lynx rufus</i>
	Western skink	<i>Eumeces skiltonianus</i>
	Western whiptail	<i>Cnemidophorus tigris</i>
	Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>
	California legless lizard	<i>Anniella pulchra</i>
	California mountain kingsnake	<i>Lampropeltis zonata</i>
	Western rattlesnake	<i>Crotalus viridis</i>
<b>Montane Hardwood</b>	<b>Vegetation</b>	
	Knobcone pine	<i>Pinus attenuata</i>
	Digger pine	<i>Pinus sabiniana</i>
	Oregon white oak	<i>Quercus garryana</i>
	Coast live oak	<i>Quercus agrifolia</i>
	California black oak	<i>Quercus kelloggii</i>
	Douglas fir	<i>Pseudotsuga menziesii</i>
	Ponderosa pine	<i>Pinus ponderosa</i>
	Manzanita species	<i>Arctostaphylos spp.</i>
	Mountain mahogany	<i>Cercocarpus betuloides</i>
	Poison oak	<i>Rhus diversiloba</i>

**Table D-1  
Habitats and their Associated Common Vegetation and Wildlife Species**

Habitat	Common Name	Scientific Name
<b>Montane Hardwood (continued)</b>	<b>Wildlife</b>	
	Pacific giant salamander	<i>Dicamptodon ensatus</i>
	Long-toed salamander	<i>Ambystoma macrodactylum</i>
	Rough-skinned newt	<i>Taricha granulosa</i>
	Ensatina	<i>Ensatina eschscholtzii</i>
	Trowbridge's shrew	<i>Sorex trowbridgii</i>
	Water shrew	<i>Sorex palustris</i>
	Broad-footed mole	<i>Scapanus latimanus</i>
	Myotis species	<i>Myotis spp.</i>
	Silver-haired bat	<i>Lasionycteris noctivagans</i>
	Big brown bat	<i>Eptesicus fuscus</i>
	Red bat	<i>Lasiurus borealis</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	Brush rabbit	<i>Sylvilagus bachmani</i>
	Sonoma chipmunk	<i>Tamias sonomae</i>
	Western gray squirrel	<i>Sciurus griseus</i>
	Brush mouse	<i>Peromyscus boylii</i>
	Pinyon mouse	<i>Peromyscus truei</i>
	Dusky-footed woodrat	<i>Neotoma fuscipes</i>
	Long-tailed vole	<i>Microtus longicaudus</i>
	Porcupine	<i>Erethizon dorsatum</i>
	Black bear	<i>Ursus americanus</i>
	Marten	<i>Martes americana</i>
	Ermine	<i>Mustela erminea</i>
	Fisher	<i>Martes pennanti</i>
	Mule deer	<i>Odocoileus hemionus</i>
	Western fence lizard	<i>Sceloporus occidentalis</i>
	Sagebrush lizard	<i>Sceloporus graciosus</i>
	Rubber boa	<i>Charina bottae</i>
	Ring-necked snake	<i>Diadophis punctatus</i>
Sharp-tailed snake	<i>Contia tenuis</i>	
California mountain kingsnake	<i>Lampropeltis zonata</i>	
<b>Valley Foothill Hardwood</b>	<b>Vegetation</b>	
	Coast live oak	<i>Quercus agrifolia</i>
	Interior live oak	<i>Quercus wislizenii</i>
	Valley oak	<i>Quercus lobata</i>
	Western juniper	<i>Juniperus occidentalis</i>
	Posion oak	<i>Rhus diversiloba</i>
	Buck brush	<i>Ceanothus cuneatus</i>
	Ceanothus species	<i>Ceanothus spp.</i>
	California buckeye	<i>Aesculus californica</i>
	Yerba santa	<i>Eriodictyon californica</i>
	Manzanita species	<i>Arctostaphylos spp.</i>
	Brome species	<i>Bromus spp.</i>
	Wild oats	<i>Avena fatua</i>

**Table D-1  
Habitats and their Associated Common Vegetation and Wildlife Species**

Habitat	Common Name	Scientific Name
Valley Foothill Hardwood (continued)	<b>Vegetation</b>	
	Foxtail species	<i>Alopecurus spp.</i>
	Filaree species	<i>Erodium spp.</i>
	Fiddleneck species	<i>Amsinckia spp.</i>
	California sycamore	<i>Platanus racemosa</i>
	California black walnut	<i>Juglans nigra</i>
	Box elder	<i>Acer negundo</i>
	Blue oak	<i>Quercus douglasii</i>
	Blue elderberry	<i>Sambucus caerulea</i>
	California wild grape	<i>Vitis californica</i>
	Toyon	<i>Heteromeles arbutifolia</i>
	California blackberry	<i>Rubus vitifolia</i>
	Barley species	<i>Hordeum spp.</i>
	Ryegrass	<i>Lolium multiflorum</i>
	Needlegrass	<i>Aristida purpurea</i>
	<b>Wildlife</b>	
	Rough-skinned newt	<i>Taricha granulosa</i>
	Ensatina	<i>Ensatina eschscholtzii</i>
	Arboreal salamander	<i>Aneides lugubris</i>
	Black salamander	<i>Aneides flavipunctatus</i>
	Foothill yellow-legged frog	<i>Rana boylei</i>
	Trowbridge's shrew	<i>Sorex trowbridgii</i>
	Broad-footed mole	<i>Scapanus latimanus</i>
	Western toad	<i>Bufo boreas</i>
	Pacific treefrog	<i>Hyla regilla</i>
	Ornate shrew	<i>Sorex ornatus</i>
	Myotis species	<i>Myotis spp.</i>
	Red bat	<i>Lasiurus borealis</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
	Sonoma chipmunk	<i>Tamia sonomae</i>
	Western gray squirrel	<i>Sciurus griseus</i>
California ground squirrel	<i>Spermophilus beecheyi</i>	
California kangaroo rat	<i>Dipodomys californicus</i>	
Heermann's kangaroo rat	<i>Dipodomys heermanni</i>	
Deer mouse	<i>Peromyscus maniculatus</i>	
California pocket mouse	<i>Perognathus californicus</i>	
Brush mouse	<i>Peromyscus boylii</i>	
California vole	<i>Microtus californicus</i>	
Dusky-footed woodrat	<i>Neotoma fuscipes</i>	
Striped skunk	<i>Mephitis mephitis</i>	
Porcupine	<i>Erethizon dorsatum</i>	
Bobcat	<i>Lynx rufus</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Ringtail	<i>Bassariscus astutus</i>	

**Table D-1  
Habitats and their Associated Common Vegetation and Wildlife Species**

<b>Habitat</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Valley Foothill Hardwood (continued)</b>	<b>Wildlife</b>	
	Western fence lizard	<i>Sceloporus occidentalis</i>
	California legless lizard	<i>Anniella pulchra</i>
	Western skink	<i>Eumeces skiltonianus</i>
	Black bear	<i>Ursus americanus</i>
	Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>
	Common kingsnake	<i>Lampropeltis getulus</i>
	Ring-necked snake	<i>Diadophis punctatus</i>
	Long-nosed snake	<i>Rhinocheilus lecontei</i>
	Sharp-tailed snake	<i>Contia tenuis</i>
	Western rattlesnake	<i>Crotalus viridis</i>
	California mountain kingsnake	<i>Lampropeltis zonata</i>
<b>Valley Foothill Riparian</b>	<b>Vegetation</b>	
	Cottonwood	<i>Populus spp.</i>
	California sycamore	<i>Platanus racemosa</i>
	Valley oak	<i>Quercus lobata</i>
	White alder	<i>Alnus rhombifolia</i>
	Box elder	<i>Acer negundo</i>
	Oregon ash	<i>Fraxinus latifolia</i>
	Wild grape	<i>Vitis californica</i>
	Wild rose	<i>Rosa californica</i>
	California blackberry	<i>Rubus vitifolius</i>
	Blue elderberry	<i>Sambucus caerulea</i>
	Poison oak	<i>Rhus diversiloba</i>
	Willow species	<i>Salix spp.</i>
	Sedge species	<i>Carex spp.</i>
	Rush species	<i>Juncus spp.</i>
	Grass species	<i>Gramineae (Grass Family)</i>
	Miner's lettuce	<i>Claytonia perfoliata</i>
	Poison hemlock	<i>Conium maculatum</i>
	Hoary nettle	<i>Urtica dioica</i>
	<b>Wildlife</b>	
	Western toad	<i>Bufo boreas</i>
	Pacific treefrog	<i>Hyla regilla</i>
	California myotis	<i>Myotis californicus</i>
	Western pipistrelle	<i>Pipistrellus hesperus</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
	Deer mouse	<i>Peromyscus maniculatus</i>
	California vole	<i>Microtus californicus</i>
	Gray fox	<i>Urocyon cinereoargenteus</i>
	Raccoon	<i>Procyon lotor</i>
	Common kingsnake	<i>Lampropeltis getulus</i>
	Common garter snake	<i>Thamnophis sirtalis</i>
Western rattlesnake	<i>Crotalus viridis</i>	

**Table D-1  
Habitats and their Associated Common Vegetation and Wildlife Species**

<b>Habitat</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Mixed Chaparral</b>	<b>Vegetation</b>	
	Scrub oak	<i>Quercus dumosa</i>
	Chaparral oak species	<i>Quercus spp.</i>
	Ceanothus species	<i>Ceanothus spp.</i>
	Manzanita species	<i>Arctostaphylos spp.</i>
	Chamise	<i>Adenostoma Fasciculatum</i>
	Mahogany species	<i>Melia spp.</i>
	Silk-tassel species	<i>Carya spp.</i>
	Toyon	<i>Heteromeles arbutifolia</i>
	Yerba santa	<i>Eriodictyon californica</i>
	California buckeye	<i>Aesculus californica</i>
	Poison oak	<i>Rhus diversiloba</i>
	Sumac species	<i>Rhus spp.</i>
	<b>Wildlife</b>	
	Ensatina	<i>Ensatina eschscholtzii</i>
	Arboreal salamander	<i>Aneides lugubris</i>
	Western toad	<i>Bufo boreas</i>
	Western spadefoot	<i>Scaphiopus hammondi</i>
	Myotis species	<i>Myotis spp.</i>
	Western pipistrelle	<i>Pipistrellus hesperus</i>
	Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
	Desert cottontail	<i>Sylvilagus audubonii</i>
	Black-tailed hare	<i>Lepus californicus</i>
	Sonoma chipmunk	<i>Tamias sonomae</i>
	Merriam's chipmunk	<i>Tamias merriami</i>
	California pocket mouse	<i>Perognathus californicus</i>
	Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
	California kangaroo rat	<i>Dipodomys californicus</i>
	Pinyon mouse	<i>Peromyscus truei</i>
	Desert woodrat	<i>Neotoma lepida</i>
	Gray fox	<i>Urocyon cinereoargenteus</i>
	Red fox	<i>Vulpes vulpes</i>
	Bobcat	<i>Lynx rufus</i>
Western skink	<i>Eumeces skiltonianus</i>	
Western whiptail	<i>Cnemidophorus tigris</i>	
Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>	
California legless lizard	<i>Anniella pulchra</i>	
California mountain kingsnake	<i>Lampropeltis zonata</i>	
Western rattlesnake	<i>Crotalus viridus</i>	

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Anderson-Cottonwood Irrigation District	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		Vernal pool fairy shrimp	<i>Branchinecta lynxi</i>	T	--
		Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	--
		Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	--
		California linderiella	<i>Linderiella occidentalis</i>	PE	--
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	FSC	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea Taxus</i>	--	SC
		Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--
Bogg's Lake hedge-hyssop	<i>Gratiola heterosepala</i>	--	E		

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**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Arvin-Edison Water Storage District	Valley foothill riparian/fresh emergent wetland Alkali scrub Annual grassland	Moestan blister beetle	<i>Lytta moesta</i>	FSC	--
		Morrison's blister beetle	<i>Lytta morrisoni</i>	FSC	--
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Blunt-nosed leopard lizard	<i>Gambelia silus</i>	E	E
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Burrowing Owl	<i>Speotyto curicularia</i>	--	SC
		Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	--	E
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		Western mastiff bat	<i>Eumops perotis</i>	--	SC
		Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	--	SC
		Tipton kangaroo rat	<i>Dipodomys nitratoides nitratoides</i>	E	E
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		Recurved larkspur	<i>Delphinium recurvatum</i>	FSC	--
		Hoover's eriastrum	<i>Eriastrum hooveri</i>	T	--
		San Joaquin woolly-threads	<i>Lembertia congdonii</i>	E	--
		San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	E	E
		Striped adobe lily	<i>Fritillaria striata</i>	PT	E
California jewelflower	<i>Caulanthus californicus</i>	E	E		
Bakersfield cactus	<i>Opuntia basilaris</i> var. <i>treleasei</i>	E	E		
Vasek's clarkia	<i>Clarkia tembloriensis</i> ssp.	FSC	--		
Comanche Point layia	<i>Clarkia calientensis</i>	FSC	--		
			<i>Lavia leucopappa</i>		

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**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Avenal, City of	Alkali scrub Annual grassland Valley foothill riparian/fresh emergent wetland	Moestan blister beetle	<i>Lytta moesta</i>	FSC	--
		Morrison's blister beetle	<i>Lytta morrisoni</i>	FSC	--
		Hoppings blister beetle	<i>Lytta hoppingi</i>	FSC	--
		San Joaquin dune beetle	<i>Coelus gracilis</i>	FSC	--
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Blunt-nosed leopard lizard	<i>Gambelia silus</i>	E	E
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	FSC	T
		Short-nosed kangaroo rat	<i>Dipodomys nitratoides brevinasus</i>	FSC	SC
		Fresno kangaroo rat	<i>Dipodomys nitratoides exilis</i>	E	E
		Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	--	SC
		San Joaquin pocket mouse	<i>Perognathus inornatus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		American badger	<i>Taxidea taxus</i>	--	SC
		California jewelflower	<i>Caulanthus californicus</i>	E	E
		San Joaquin woolly-threads	<i>Lembertia congdonii</i>	E	--
		Recurved larkspur	<i>Delphinium recurvatum</i>	FSC	--
Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC		
Bella Vista Water District	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	FSC	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--

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**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Coalinga, City of	Annual grassland Valley foothill riparian/fresh emergent wetland Alkali scrub	Hopping's blister beetle	<i>Lytta hoppingi</i>	FSC	--
		San Joaquin dune beetle	<i>Coelus gracilis</i>	FSC	--
		Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		Heartscale	<i>Atriplex cordulata</i>	FSC	--
		Red-headed sphecoid wasp	<i>Eucerceris ruficeps</i>	FSC	--
		California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		Blunt-nosed leopard lizard	<i>Gambelia silus</i>	E	E
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		California Horned Lark	<i>Eremophila alpestris actia</i>	FSC	--
		LeConte's Thrasher	<i>Toxostoma redivivum</i>	--	SC
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	FSC	T
		Fresno kangaroo rat	<i>Dipodomys nitratoides exilis</i>	E	E
		American badger	<i>Taxidea taxus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		California jewelflower	<i>Caulanthus californicus</i>	E	E
		Pale-yellow layia	<i>Layia heterotricha</i>	FSC	--
San Joaquin woolly-threads	<i>Lembertia congdonii</i>	E	--		
Hoover's eriastrum	<i>Eriastrum hooveri</i>	T	--		

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**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Colusa County Water District	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Northern Goshawk	<i>Accipiter gentilis</i>	FSC	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Blue-gray Gnatcatcher	<i>Poliopitila caerulea</i>	FSC	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Saltmarsh Common Yellowthroat	<i>Geothlypis trichas sinuosa</i>	FSC	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		Striped adobe lily	<i>Fritillaria striata</i>	PT	T
Contra Costa Water District	Annual grassland Saline emergent wetland Valley foothill riparian/fresh emergent wetland	California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Double-crested cormorant	<i>Phalacrocorax auritus</i>	--	SC
		California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	FSC	T
		California Clapper Rail	<i>Rallus longirostris obsoletus</i>	E	E
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		Osprey	<i>Pandion haliaetus</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Saltmarsh Common Yellowthroat	<i>Geothlypis trichas sinuosa</i>	FSC	SC
		Saltmarsh wandering shrew	<i>Sorex vagrans halicoetes</i>	FSC	SC
		Saltmarsh harvest mouse	<i>Reithrodontomys raviventris</i>	E	E
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	FSC	R
		Delta tule pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	FSC	--
		Soft bird's beak	<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	PE	R
Antioch dunes evening primrose	<i>Oenothera deltoides</i> ssp. <i>howellii</i>	E	E		

C-093704

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Coming Water District	Annual grassland Valley foothill riparian/fresh emergent wetland	Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Merlin	<i>Falco columbarius</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
Del Puerto Water District	Valley foothill riparian/fresh emergent wetland Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		California Horned Lark	<i>Eremophila alpestris actia</i>	FSC	--
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	FSC	T
		American badger	<i>Taxidea taxus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes mactoris mutica</i>	E	T
		Heartscale	<i>Atriplex cordulata</i>	FSC	--

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
East Bay Municipal Utility District	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland Saline emergent wetland	California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	PE	T
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	FSC	T
		California Clapper Rail	<i>Rallus longirostris obsoletus</i>	E	E
		Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	T	SC
		Caspian Tern	<i>Sterna caspia</i>	--	SC
		California Least Tern	<i>Sterna antillarum</i>	E	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Saltmarsh Common Yellowthroat	<i>Geothlypis trichas sinuosa</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		Saltmarsh wandering shrew	<i>Sorex vagrans halicoetes</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		Delta tule pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	FSC	--
Congdon's tarplant	<i>Hemizonia parryi</i> ssp. <i>congdonii</i>	FSC	--		
Showy Indian clover	<i>Trifolium amoenum</i>	PE	--		
Fragrant fritillary	<i>Fritillaria liliacea</i>	FSC	--		
Contra Costa goldfields	<i>Lasthenia conjugens</i>	PE	--		
Diablo helianthella	<i>Helianthella castanea</i>	FSC	--		
Most beautiful jewelflower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	FSC	--		

C-093706

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
El Dorado Irrigation District	Annual grassland Valley foothill hardwood	California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Long-eared Owl	<i>Asio otus</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		California Horned Lark	<i>Eremophila alpestris actia</i>	FSC	--
		Purple Martin	<i>Progne subis</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Yellow Breasted Chat	<i>Icteria virens</i>	--	SC
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		Layne's butterweed	<i>Senecio layneae</i>	T	R
		Pine Hill ceanothus	<i>Ceanothus roderickii</i>	E	R
		Pine Hill flannelbush	<i>Fremontodendron californicum ssp. decumbens</i>	E	R
El Dorado bedstraw	<i>Galium californicum ssp. sierrae</i>	FSC	--		
Red hill's soaproot	<i>Wyethia reticulata</i>	FSC	--		
Stebbins' morning glory	<i>Chlorogalum grandiflorum</i>	E	E		
		<i>Calystegia stebbinsii</i>			

C-093707

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Glenn Valley Water District	Annual grassland Valley foothill riparian/fresh emergent wetland	Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
Kanawha Water District	Annual grassland Valley foothill riparian/fresh emergent wetland	Western spadefoot	<i>Scaphiopus hammondi</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		Caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	FSC	--

C-093708

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors If No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Mountain Gate Community Services District	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland	Shasta sideband snail	<i>Monadenia troglodytes</i>	FSC	--
		Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Western spadefoot	<i>Scaphiopus hammondi</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	FSC	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		American badger	<i>Taxidea taxus</i>	--	SC
Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--		
Orland-Artois Water District	Annual grassland	Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC

C-093709

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Sacramento Municipal Utility District	Annual grassland Fresh emergent wetland	Vernal pool fairy shrimp	<i>Branchinecta lynxi</i>	T	--
		Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	--
		California linderiella	<i>Linderiella occidentalis</i>	PE	--
		California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Short eared Owl	<i>Asio flammeus</i>	--	SC
		California Horned Lark	<i>Eremophila alpestris actia</i>	FSC	--
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
Sacramento orcutt grass	<i>Orcuttia viscida</i>	PE	E		
Bogg's Lake hedge-hyssop	<i>Gratiola heterosepala</i>	--	E		

C-093710

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
San Benito County Water District	Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		Western spadefoot	<i>Scaphiopus hammondi</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		California Horned Lark	<i>Eremophila alpestris actia</i>	FSC	--
		Purple Martin	<i>Progne subis</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		Western mastiff bat	<i>Eumops perotis</i>	T	SC
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T		
San Joaquin saltbush	<i>Atriplex joaquiniana</i>	FSC	--		

C-093711

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
San Luis Water District	Alkali scrub Annual grassland Valley foothill riparian/fresh emergent wetland	Moestan blister beetle	<i>Lytta moesta</i>	FSC	--
		California tiger salamander	<i>Ambystoma californiense</i>	C	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		Blunt-nosed leopard lizard	<i>Gambelia silus</i>	E	E
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	FSC	T
		Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	--	SC
		Giant kangaroo rat	<i>Dipodomys ingens</i>	E	E
		Fresno kangaroo rat	<i>Dipodomys nitratooides exilis</i>	E	E
		Short-nosed kangaroo rat	<i>Dipodomys nitratooides brevinasus</i>	FSC	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		San Joaquin woolly-threads	<i>Lembertia congdonii</i>	E	--
Heartscale	<i>Atriplex cordulata</i>	FSC	--		
Hoover's eriastrum	<i>Eriastrum hooveri</i>	T	--		
Recurved larkspur	<i>Delphinium recurvatum</i>	FSC	--		
Hispid bird's beak	<i>Cordylanthus mollis ssp. hispidus</i>	FSC	--		

C-093712

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Santa Clara Valley Water District	Annual grassland	Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	T	--
	Perennial grassland	Edgewood blind harvestman	<i>Calicina minor</i>	FSC	--
	Valley foothill riparian/fresh emergent wetland	California brackish water snail	<i>Tryonia imitator</i>	FSC	--
	Mixed chaparral	California tiger salamander	<i>Ambystoma californiense</i>	C	SC
	Valley foothill hardwood	California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Ferruginous Hawk	<i>Buteo regalis</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Long-eared Owl	<i>Asio otus</i>	--	SC
		Long-billed Curlew	<i>Numenius americanus</i>	--	SC
		California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	FSC	T
		California Clapper Rail	<i>Rallus longirostris obsoletus</i>	E	E
		California Least Tern	<i>Sterna caspia</i>	E	E
		Saltmarsh Common Yellowthroat	<i>Geothlypis trichas sinuosa</i>	FSC	SC
		Black Swift	<i>Cypseloides niger</i>	--	SC
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		American badger	<i>Taxidea taxus</i>	--	SC
		Coyote ceanothus	<i>Ceanothus ferrisae</i>	E	--
		Santa Clara Valley dudleya	<i>Dudleya setchellii</i>	E	--
		Fountain thistle	<i>Cirsium fontinale</i> var. <i>fontinale</i>	E	E
		Fragrant fritillary	<i>Fritillaria liliacea</i>	FSC	--
		Talus fritillary	<i>Fritillaria falcata</i>	FSC	--
		Most beautiful jewelflower	<i>Streptanthus albidus</i> ssp.	FSC	--
		California sea blite	<i>peramoenus</i>	E	--
		Pt. Reyes bird's beak	<i>Suaeda californica</i>	FSC	SC
		Saltmarsh wandering shrew	<i>Cordylanthus maritimus</i> ssp.	FSC	E
	Saltmarsh harvest mouse	<i>palustris</i>	E		
		<i>Sorex vagrans halicoetes</i>			
		<i>Reithrodontomys raviventris</i>			

C-093713

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Santa Clara Valley Water District (continued)		Sharsmith's harebell	<i>Campanula sharsmithiae</i>	FSC	SC
		Mt. Hamilton thistle	<i>Cirsium fontinale</i> var. <i>campylon</i>	FSC	--
		Mt. Diablo phacelia	<i>Phacelia phacelioides</i>	FSC	--
		Brandegee's eriastrum	<i>Eriastrum brandegeae</i>	FSC	--
		Rock sanicle	<i>Sanicula saxatilis</i>	FSC	--
		Mt. Hamilton coreopsis	<i>Coreopsis hamiltonii</i>	FSC	R
		Mt. Hamilton jewelflower	<i>Streptanthus callistus</i>	FSC	--
		Metcalf Canyon jewelflower	<i>Streptanthus albidus</i> ssp. <i>albidus</i>	FSC	--
		Santa Cruz tarplant	<i>Holocarpha macradenia</i>	E	--
		Congdon's tarplant	<i>Hemizonia parryi</i> ssp. <i>congdonii</i>	FSC	--
Shasta Community Services District	Valley foothill hardwood-conifer Mixed chaparral	Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Swainson's Hawk	<i>Buteo swainsoni</i>	--	T
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Purple Martin	<i>Progne subis</i>	--	SC
		Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	FSC	SC
Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC		

C-093714

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Shasta County Service Area No. 6 - Jones Valley	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral Annual grassland	Shasta sideband snail	<i>Monadenia troglodytes</i>	FSC	--
		Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Sharp-shinned Hawk	<i>Accipiter striatus</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	FSC	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		American badger	<i>Taxidea taxus</i>	--	SC
		Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--
Shasta County Service Area No. 25 - Keswick	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Mixed chaparral	Shasta sideband snail	<i>Monadenia troglodytes</i>	FSC	--
		Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	FSC	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--

C-093715

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Shasta Lake, City of	Valley foothill hardwood-conifer Valley foothill riparian/fresh emergent wetland Annual grassland	Shasta sideband snail	<i>Monadenia troglodytes</i>	FSC	--
		Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Western spadefoot	<i>Scaphiopus hammondi</i>	--	SC
		Foothill yellow-legged frog	<i>Rana boylei</i>	FSC	SC
		California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	FSC	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		American badger	<i>Taxidea taxus</i>	--	SC
Silky cryptantha	<i>Cryptantha crinita</i>	FSC	--		
Silverthorn Summer Homes, Inc.	Valley foothill hardwood-conifer Mixed chaparral	Shasta salamander	<i>Hydromantes shastae</i>	FSC	T
		Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	FSC	SC

C-093716

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status <sup>a</sup>	
		Common Name	Scientific Name	Federal	State
Westlands Water District	Alkali scrub Annual grassland Valley foothill riparian/fresh emergent wetland	Moestan blister beetle	<i>Lytta moesta</i>	FSC	--
		Morrison's blister beetle	<i>Lytta morrisoni</i>	FSC	--
		Hoppings blister beetle	<i>Lytta hoppingi</i>	FSC	--
		San Joaquin dune beetle	<i>Coelus gracilis</i>	FSC	--
		Western spadefoot	<i>Scaphiopus hammondii</i>	--	SC
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Blunt-nosed leopard lizard	<i>Gambelia silus</i>	E	E
		Giant garter snake	<i>Thamnophis gigas</i>	T	T
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	FSC	T
		Short-nosed kangaroo rat	<i>Dipodomys nitratoides brevinasus</i>	FSC	SC
		Fresno kangaroo rat	<i>Dipodomys nitratoides exilis</i>	E	E
		Giant kangaroo rat	<i>Dipodomys ingens</i>	E	E
		Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	--	SC
		San Joaquin pocket mouse	<i>Perognathus inornatus</i>	--	SC
		San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T
		American badger	<i>Taxidea taxus</i>	--	SC
		Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC
		California jewelflower	<i>Caulanthus californicus</i>	E	E
San Joaquin woolly-threads	<i>Lembertia congdonii</i>	E	--		
Recurved larkspur	<i>Delphinium recurvatum</i>	FSC	--		
Panoche peppergrass	<i>Lepidium jaredii</i>	FSC	--		

C-093717

**Table D-2**  
**Habitats Identified and Special-Status Plant and Animal Species**  
**Expected to Occur within the Boundaries of Affected CVP Water Contractors if No Development Had Occurred**

CVP Water Contractor	Habitats Identified in District	Special-Status Species Expected to Occur in District		Status*	
		Common Name	Scientific Name	Federal	State
Westside Water District	Valley foothill hardwood Valley foothill riparian/fresh emergent wetland Annual grassland	Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	--
		Western pond turtle	<i>Clemmys marmorata</i>	FSC	SC
		Golden Eagle	<i>Aquila chrysaetos</i>	--	SC
		Northern Harrier	<i>Circus cyaneus</i>	--	SC
		Cooper's Hawk	<i>Accipiter cooperii</i>	--	SC
		Peregrine Falcon	<i>Falco peregrinus</i>	E	E
		Prairie Falcon	<i>Falco mexicanus</i>	--	SC
		Merlin	<i>Falco columbarius</i>	--	SC
		Burrowing Owl	<i>Speotyto cunicularia</i>	--	SC
		Long-eared Owl	<i>Asio otus</i>	--	SC
		Short-eared Owl	<i>Asio flammeus</i>	--	SC
		Purple Martin	<i>Progne subis</i>	--	SC
		Loggerhead Shrike	<i>Lanius ludovicianus</i>	FSC	--
		California Yellow Warbler	<i>Dendroica petechia</i>	--	SC
		Yellow-breasted Chat	<i>Icteria virens</i>	--	SC
		Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC	SC
Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>	FSC	SC		
San Joaquin saltbush	<i>Atriplex joaquiniana</i>	FSC	--		
*Federal:	State:				
E = Endangered	E = Endangered				
T = Threatened	T = Threatened				
PE = Proposed Endangered	R = Rare				
PT = Proposed Threatened	SC = Species of Special Concern				
C = Federal candidate					
FSC = Federal Species of Concern					

C-093718

APPENDIX E

# Effects on Land Use from the Proposed Project and Alternatives

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C-093719

Proposed Project		Alternative 1 - No Project and Alternative 3 - Permit Consolidation and Conformance										Alternative 2 - Existing Conditions				
		Irr. Ag.		Dryland		M&I		Undev.		Irr. Ag.		Dryland		M&I		Undev.
CVP Water Contractor	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	CVP	Non-CVP	
	CVP	Non-CVP		CVP		Non-CVP		CVP		Non-CVP		CVP		Non-CVP		CVP
Anderson-Cottonwood Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Arvin-Edison Water Storage District	820	0	820	0	0	0	0	0	0	0	0	0	0	0	0	
Avenal, City of	0	1,192	0	1,192	0	0	0	0	0	0	0	0	0	0	0	
Bella Vista Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Coalinga, City of	0	23,401	0	23,401	0	0	0	0	0	0	0	0	0	0	0	
Colusa County Water District	1,709	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Contra Costa Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Coming Water District	1,647	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Del Puerto Water District	808	192	0	0	0	0	0	0	0	0	0	0	0	0	0	
East Bay Municipal Utility District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
El Dorado Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Glenn Valley Water District	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kanawha Water District	902	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Mountain Gate Community Services District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Orland-Artois Water District	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sacramento Municipal Utility District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
San Benito County Water District	4,687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
San Luis Water District	9,609	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Santa Clara Valley Water District	4,701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shasta Community Services District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table E-1  
Effects on Land Use from the Proposed Project and Alternatives

C-093720

**Table E-1  
Effects on Land Use from the Proposed Project and Alternatives**

CVP Water Contractor	Proposed Project						Alternative 1 - No Project and Alternative 3 - Permit Consolidation and Conformance						Alternative 2 - Existing Conditions					
	Irr. Ag.		Dryland Ag.	M&I		Undev.	Irr. Ag.		Dryland Ag.	M&I		Undev.	Irr. Ag.		Dryland Ag.	M&I		Undev.
	CVP	Non-CVP		CVP	Non-CVP		CVP	Non-CVP		CVP	Non-CVP		CVP	Non-CVP		CVP	Non-CVP	
Shasta County Service Area No. 6 - Jones Valley	0	0	0	668	0	503	0	0	0	0	668	503	0	0	0	668	0	503
Shasta County Service Area No. 25 - Keswick	0	0	0	2,508	0	1,127	0	0	0	0	918	2,717	0	0	0	918	0	2,717
Shasta Lake, City of	0	0	0	231	0	0	0	0	0	0	118	113	0	0	0	118	0	113
Silverthorn Summer Homes, Inc.	0	0	0	55	0	0	0	0	0	0	55	0	0	0	0	55	0	0
Westlands Water District	36,386	0	250	33	0	12,732	0	0	36,636	0	33	12,732	36,386	0	250	33	0	12,732
Westside Water District	997	0	0	0	0	0	0	0	424	0	0	573	239	0	185	0	0	573
<b>Total</b>	<b>62,766</b>	<b>24,785</b>	<b>5,405</b>	<b>79,996</b>	<b>0</b>	<b>661,715</b>	<b>0</b>	<b>32,366</b>	<b>56,873</b>	<b>0</b>	<b>62,035</b>	<b>683,393</b>	<b>56,543</b>	<b>26,892</b>	<b>5,804</b>	<b>60,121</b>	<b>1,914</b>	<b>683,393</b>

\*The total acreage does not include 42 acres of native vegetation within the overlap zone of the City of Avenal and Westlands Water District.  
 \*The total acreage does not include 7,160 acres of irrigated agricultural and native vegetation lands within the overlap zone of the City of Coalinga and Westlands Water District.

C-093721

APPENDIX F

# Project Plan for the CVPIA Section 3406(b)(1) "Other" Program

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**CENTRAL VALLEY PROJECT IMPROVEMENT ACT  
DRAFT PROJECT PLAN  
(b)(1) "other" PROGRAM**



Prepared by U.S. Fish and Wildlife Service and  
U.S. Bureau of Reclamation  
September 17, 1997

## **DRAFT PROJECT PLAN**

**I. Project Title:** CVPIA Section 3406(b)(1) "Other" Program

**II. Responsible Entities:**

Fish and Wildlife Service - Marie Sullivan  
Bureau of Reclamation - Chuck Solomon

**III. Background**

While many of the actions required by the CVPIA address anadromous fish and migratory waterfowl, subsection 3406(b)(1) of the CVPIA requires that, "... the Secretary shall make all reasonable efforts consistent with the requirements of this section [Sec. 3406. Fish, Wildlife and Habitat Restoration] to address other identified adverse environmental impacts of the Central Valley Project . . . .". This provision allows for establishment of the (b)(1) "other" Program, and its purpose, to protect, restore, and mitigate for past fish and wildlife impacts of the CVP not already addressed by the CVPIA.

Over the last half-century, the biological resources of the Central Valley Basin have been significantly altered with the development of the CVP, the State Water Project, and many local water development projects. These projects have cumulatively resulted in the inundation of thousands of acres of upland, seasonal wetland, and riparian habitats by reservoirs; further impacts to wetland, riparian, and aquatic habitats downstream of reservoirs due to changes in timing and extent of river flows; and the conversion of upland and seasonal wetland habitats to agricultural use and/or municipal and industrial development. Construction of the CVP alone included 17 storage dams, 3 diversion dams, 1,437 miles of canals, 54 pumping plants, and 243 miles of drains, pipelines and tunnels. These facilities have contributed to the alteration of over 600 stream miles (Bureau of Reclamation, Army Corps of Engineers, 1991), inundation of over 100,000 acres of bottomland wildlife habitat (Department of Interior 1980), and the loss of an estimated 250,000 acres of wetland habitat (Fish and Wildlife Service 1989). Despite the loss in fish and wildlife habitat quality and quantity throughout the Central Valley, the opportunity still exists through this and other programs to improve the biodiversity of the Central Valley.

The geographic boundary and the scope of the (b)(1) "other" Program include the areas and species that were directly or indirectly affected by construction or operation of the CVP, in addition to natural resources which were subject to secondary impacts from the use of CVP project water. Direct effects pertain to impacts attributed to CVP facilities such as storage or diversion dams, canals, or pumping plants. Indirect effects are attributed to changes in the ecosystem which are a result of these structures. For example, degradation of wetland and

riparian habitat downstream of a CVP dam due to a change in hydrologic conditions or changes in surface and groundwater from an altered flooding regime. Secondary impacts occur within a service area and are attributed to alteration in habitat, primarily from development which receives CVP water.

#### **IV. Objectives**

##### Biological

- A. Protect and restore native habitats impacted by CVP that are not specifically addressed in the Fish and Wildlife Restoration Activities section of the CVPIA. Initial focus will be on habitats known to have experienced the greatest percentage decline in habitat quantity and quality since construction of the CVP, where such decline could be attributed to the CVP (based upon direct and indirect loss of habitat from CVP facilities and use of CVP water). These habitats include riparian, aquatic (riverine, estuarine, and lacustrine), alkali desert scrub, wetlands (including vernal pools), foothill chaparral, valley-foothill hardwood, and grassland.
- B. Stabilize and improve populations of native species impacted by CVP that are not specifically addressed in the Fish and Wildlife Restoration Activities section of the CVPIA. Initial focus will be given to federally listed, proposed or candidate species, other non-listed State and Federal species of special concern including resident fish and migratory birds, and other native wildlife species associated with the habitat types listed above. Examples of the latter include native herptofauna associated with riparian and/or valley-foothill hardwood habitat throughout the Central Valley, native raptor species dependent upon valley-foothill hardwood and grassland for nesting and foraging, and neotropical species that use riparian corridors for migration, nesting, and foraging.

More specific objectives to be addressed in prioritization of projects are listed in Section VI.

#### **V. Types of Actions -**

The following types of activities will be emphasized under (b)(1) "other" through the prioritization and planning process discussed in Section VI:

- Implement habitat restoration, maintenance, and protection in partnership with willing landowners of agricultural and municipal lands.
- Coordinate and participate with ongoing State and Federal habitat restoration activities including, but not limited to, the CALFED processes, existing Department of Fish and Game operations, Category III expenditures, and other CVPIA provisions such as the Land Retirement Program and the Anadromous Fish Restoration Program.

- Partnerships with other agencies and the public including watershed conservancies, conservation groups, water districts, non-profit entities and private landowners to assure the greatest overall program benefit.
- Studies will be performed where appropriate; however, they will generally receive a lower priority than implementation actions unless the study is a necessary precursor to an implementation action.

Initial focus will be given to funding the following types of projects:

- Acquire areas of existing habitat through purchase, lease, or easements for special status species impacted by the CVP.
- Maintaining, restoring, and enhancing priority habitats and habitat for priority species.
- Performing studies necessary to determine appropriate species and habitat-specific actions.

During fiscal years 1997 and 1998, this program will primarily fund activities developed as part of the Central Valley Project Conservation Program (CVPCP). The CVPCP is a long-term, adaptive management program to address the biological needs of special-status species, within areas potentially affected by the CVP. The CVPCP emphasizes projects which address high-priority needs of special status species identified during the section 7 consultations for interim renewal of a number of CVP water service contracts and the renewal of Friant water service contracts.

## **VI. Program Coordination and Development**

Mitigating for impacts to "other" species affected by the CVP will require development of partnerships, local involvement, public support, adaptive management, and flexibility. Prioritization of habitat types and species will be coordinated with technical experts on an annual basis. Development of specific actions to address priority habitats and species and their stressors will be coordinated with agencies, local organizations, and CALFED. Opportunities will be sought for the public to assist in planning and implementing restoration actions.

When applicable, projects will be coordinated with other CVPIA programs including the Anadromous Fish Restoration Plan [3406(b)(1)]; the Spawning Gravel and Riparian Habitat Programs [3406(b)(13)]; the Ecological and Hydrologic Modeling effort 3406(g); the Land Retirement Program [3408(h)]; and the San Joaquin and Stanislaus River Planning efforts [3406(c)].

Projects will also be coordinated with other Federal, State, and private interests that have similar protection and restoration goals. For example, there are potentially many opportunities to develop joint partnerships through the Service's Private Lands Program, Natural Resource Conservation Service's Wetland Reserve Program, Reclamation's Wetland Program, Conservation Resource Management Plan projects, the Wildlife Conservation Board

and other programs within the state provided that proposed activities meet the objectives of the (b)(1) "other" Program and are a priority as determined by Section VII below. When applicable, these relationships will be specified in each proposed action plan. However, in addition to meeting the goals and objectives of this Program, projects to be funded through the (b)(1) "other" Program must be ranked in accordance with the Program prioritization factors described below.

(B)(1) "other" projects will be collaborated with CALFED through a variety of means. Appointees from CALFED will be invited to participate in a technical team to develop priority habitat and species for the (b)(1) "other" Program. In addition, a (b)(1) "other" representative will participate in the CALFED Ecosystem Restoration Program to coordinate specific CALFED and CVPIA projects.

## **VII. Project Prioritization Factors**

The following factors will be used to focus the Program, prioritize projects, and select sites for protection, restoration, or mitigation.

### **A. Biological Resource Considerations**

**High Priority Habitat Benefit:** Project supports biologically functioning priority habitat listed in Section IV above.

**Special Status Species:** Project will benefit special status species including listed, proposed, or candidate species, other non-listed State and Federal species of special concern including resident fish and migratory birds, or other native wildlife species. Projects benefitting listed or proposed species should provide one or more of the following benefits with prioritization given in the ensuing order: avoidance of extirpation, listing, and loss of habitat for listed or proposed species.

**In-Kind Habitat:** Project site supports habitat or species that have been impacted directly or indirectly by the CVP.

**Magnitude of Benefits to Biological Resources:** Project has high biological benefit and addresses major limiting/constraining factors.

**Project Connectivity:** Project site is biologically and physically connected to existing native habitat to allow for the natural "restocking" of desired species.

**Cumulative Benefits:** Project would provide cumulative benefits to native resources as it would complement existing project or management practices on adjacent lands.

**Ecosystem or Multiple Species Benefits:** Project has ecosystem, community, or

multiple-species benefits with particular emphasis on specialists and/or keystone species.

**Biological Buffer Zone:** Project site is surrounded by a habitat buffer(s) which is only lightly or moderately impacted by human activities.

**Protection/Restoration of Natural Habitats and Habitat Values:** Protection of existing habitat that is "biologically functional" for native species will have a higher priority than restoration of degraded habitat.

**On-site Biological Compensation:** Project would restore or protect similar habitat type within close proximity to habitat impacted by CVP.

**Presence of Surface and Groundwater:** Project site has sufficient groundwater and surface water to support native vegetation which was historically supported on site. Lower priority will be given to those areas where hydrology is currently lacking and needs to be restored or supplemental water may need to be provided for successful restoration.

**Impact to Water Quality:** Project will benefit water quality for all uses.

**Mitigation of Adverse Impacts:** Long-term project benefits outweigh any short-term construction, operation, or maintenance impacts.

**Long-term Benefits:** Project has continuing or long-term benefits rather than one-time or short-term benefits.

## **B. Implementation Considerations**

**Project Costs:** The total cost, cost effectiveness, and ongoing operating and maintenance (O&M) costs should be considered when developing priorities. Program/projects with a greater cost effectiveness will generally be a higher priority than those with lower cost effectiveness.

**Technical Feasibility:** Project can be implemented using proven and existing technology. Technical experts are available to assist in project design and implementation. The simpler the restoration techniques required to restore an area the better as less maintenance and monitoring is generally needed.

**Timeliness:** Project can be implemented in a timely fashion and there are no foreseen protracted delays.

**Partnership/Opportunities:** Cost-sharing funding is available and opportunities to

partnership with other agencies, organizations, or landowners to provide the greatest possible benefit and most efficient use of program funds. There is community support for the project. This is a high priority consideration when all other factors are equal between competing proposed projects.

**Contribution to other CVPIA objectives:** Project has been coordinated with and contributes substantially to attainment of the goals and objectives of other provisions of the CVPIA.

**Implementation:** Legal, regulatory, technical, and financial obstacles to implementation have been evaluated and are not determined to be a hindrance to implementing the project in a timely manner. The presence of any non-native plants or wildlife in the project area have been determined to not be a significant hindrance to restoration activities being successful.

### **VIII. Target Habitat Type/Acreage**

*A technical group comprised of agency, academia, and conservation representatives, etc. who have a broad knowledge of the habitat types of the Central Valley will develop target levels to determine when sufficient ecologically equivalent habitat has been restored and/or protected in accordance with the CVPIA. Final determination will take into account what is technically, economically, and socially feasible to restore or protect.*

### **IX. Budget**

This is a continuing program initially commenced in FY96. It will have a continuing Department of Interior budget of approximately \$1-\$2 million/year for project implementation.

### **X. Funding Sources - Including But Not Limited To:**

Federal - Reimbursable funds including the Restoration Fund within section 3407 of the CVPIA, Category 3 under the Delta/Bay Accord, CALFED  
State - DFG, WCB, DWR as appropriate  
Other - National Fish and Wildlife Foundation, private cost share  
Funding sources will be specified in each proposed project.

### **XI. Estimated Benefits of this Program**

Successful implementation of this program will: restore, protect, and mitigate for wetland, upland, and riparian habitats throughout the Central Valley Basin; provide an increase in fish and wildlife populations dependent on these habitats; and, assist in the maintenance of ecological functions and biodiversity of associated ecosystems. The program will serve to avoid possible future listings under the Endangered Species Act,

possibly assist in the de-listing or down-listing of species dependent on these habitat types, and facilitate future Endangered Species Act compliance activities.

Each project proposal will specify how program objectives and benefits will be met.

## **XII. Measure of Success/Monitoring**

All actions undertaken within this program will be monitored for results. Each action proposal will contain a proposal for monitoring affects and will allow for program modifications as a result of monitoring to insure desired benefits. It may be necessary for local entities, including NRCS, BLM, and DFG to assist in the measurement of success of any action item.

## **References**

U.S. Army Corps of Engineers, 1991. Aerial Atlas: Collinsville to Shasta Dam.

U.S. Bureau of Reclamation. San Joaquin River Atlas.

U.S. Department of the Interior, Water and Power Resources Service. 1980. Draft Environmental Statement on the Reauthorization of the CVP and the Coordinated Operating Agreement for CVP-SWP.

U.S. Fish and Wildlife Service. June 1989. Wetlands of the California Central Valley: Status and Trends - 1939 to Mid-1980's. 29 pp.

U.S. Water Resources Council. June 1971. Comprehensive Framework Study - California Region. Appendix 5: Water Resources.

# United States Department of the Interior



The Fish and Wildlife Service and the Bureau of Reclamation are accepting proposals from parties interested in participating in the Central Valley Project Improvement Act (b)(1) "other" program in fiscal year 1998. This program provides an opportunity to implement habitat restoration and protection projects to benefit fish and wildlife species and their associated habitats impacted by the construction, operation, and maintenance of the CVP.

## Eligibility Requirements:

- Target species or habitat must have been impacted directly or indirectly by construction, maintenance or operation of the CVP, including the use of CVP project water.
- Priority will be given to habitats known to have experienced the greatest percentage decline in habitat quantity and quality since construction of the CVP that could be attributed to the CVP including riparian, aquatic (lacustrine and riverine), alkali desert scrub, wetlands (including vernal pools), foothill chaparral, valley-foothill hardwood, and grassland.
- Priority wildlife species include federally listed, proposed or candidate species, other non-listed State and Federal species of special concern including resident fish and migratory birds, and other native wildlife species associated with a priority habitat.

## Submitted Proposals Should Contain:

- Title of Project
- A detailed written legal description of the project location including size and a project map including local reference points.
- Detailed description of the proposed activities. When relevant include managing entity and who will be responsible for maintenance and monitoring.
- Surrounding land use activities to project area.
- Relationship between proposed activities and the CVP.
- Species to benefit from project activity, including federal and state status.
- Habitat requirements of target species.
- Describe any suitable habitat for the species of concern in the project vicinity.
- Existing condition of habitat within and adjacent to project area.
- Projected time frame for project implementation and completion.
- Cost estimate
- Other potential funding sources being considered and collaborators.
- Name of principal investigator(s), address, and phone number

Proposed project proposals should be submitted to:

U.S. Fish and Wildlife Service

Central Valley Improvement Act (b)(1) "other" Program Manager

3310 El Camino Ave., Suite 130

Sacramento, California 95821-6340

Phone: 916/979-2760 ext. 352, FAX 916/979-2770.

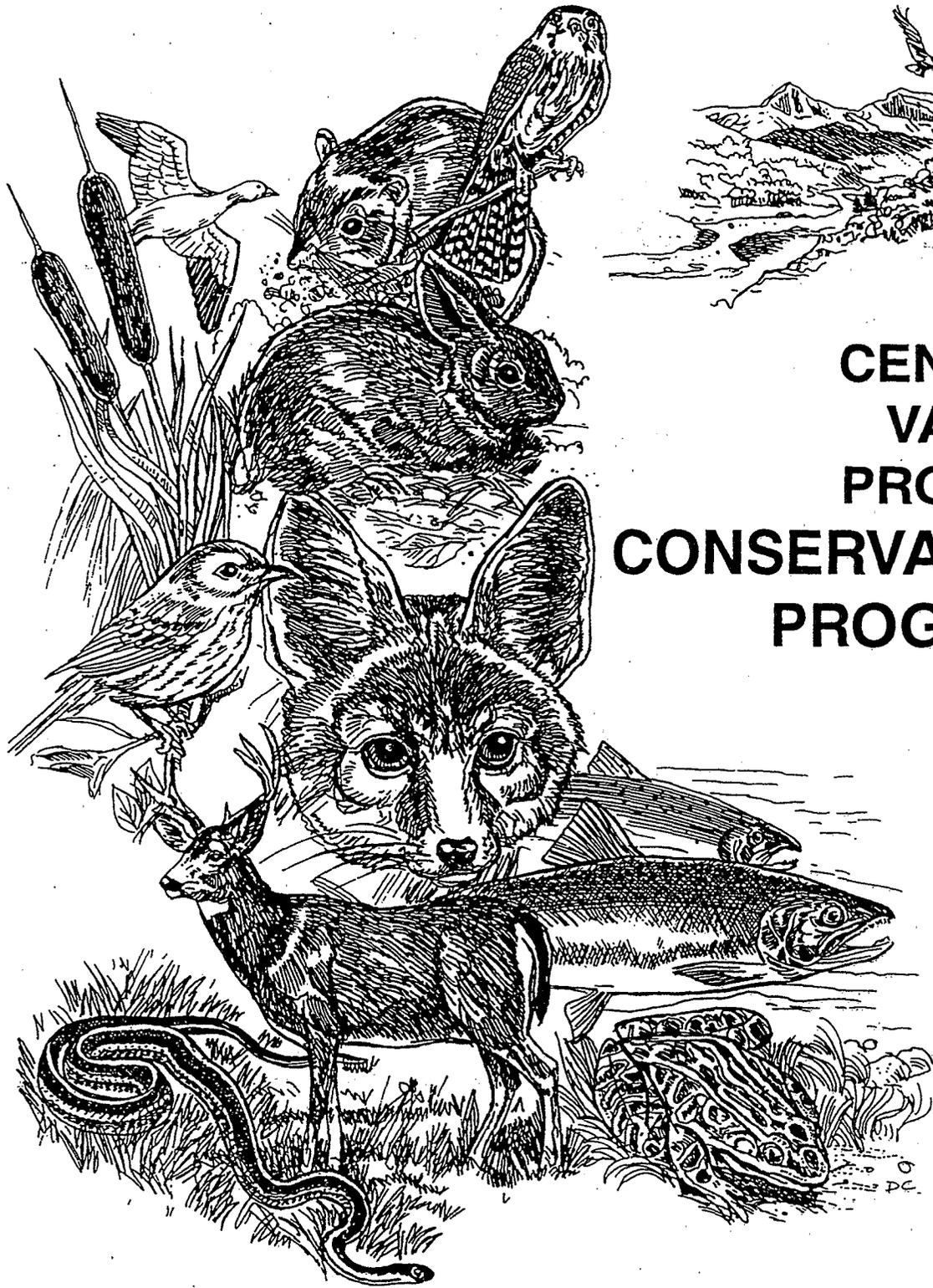
APPENDIX G

# Central Valley Project Conservation Program

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# CENTRAL VALLEY PROJECT CONSERVATION PROGRAM

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U.S. Bureau of Reclamation / U.S. Fish and Wildlife Service  
September 1997

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## *Acknowledgment*

**T**his document was prepared by the Central Valley Project Conservation Program Team, Rosalie Faubion, BOR, Kurt Flynn, BOR, Rod Hall, BOR, Michael Hoover, FWS, Larry Host, FWS, Patrick Leonard, FWS, Frank Michny, BOR, Chuck Solomon, BOR, and Marie Sullivan, FWS. It sets the overall goals and objectives of the program and an operational framework. By its nature the Conservation Program is dynamic; consequently, this document is dynamic and will be changed/updated periodically to reflect new information, changing ecological needs of species, and input from agencies and publics.

If you have any questions or comments on this report, please provide them to Chuck Solomon, Conservation Program Manager, MP 152, Bureau of Reclamation, 2800 Cottage Way, Sacramento, California 95825.

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# CENTRAL VALLEY PROJECT CONSERVATION PROGRAM

## 1.0 INTRODUCTION

This document describes a framework for the Central Valley Project Conservation Program. The primary goal of the Conservation Program, developed and managed by the Bureau of Reclamation (Reclamation) and the Fish and Wildlife Service (Service), is to meet the needs, including habitat needs, of special status-species in the area affected by the Central Valley Project (CVP). The special-status species whose needs will be addressed by the Conservation Program include primarily federally-listed species. In addition, species that are candidates or are proposed species for Federal listing, as well as other species of concern, will benefit from the Program if they have high-priority biological needs. Together with the attached appendix, this document describes the Conservation Program and how it will be implemented.

### 1.1 Purpose and Need

The overall purpose and need of the Conservation Program is to meet, in concert with other programs, the habitat and related needs, of special-status species as defined above. Implementation of the Conservation Program, by addressing the needs of threatened and endangered species, should reduce existing threats to special-status species whose historic or current range includes areas that have been affected by the CVP and is thus expected to facilitate the forthcoming "comprehensive" section 7 consultation on the operation of the CVP, including implementation of the Central Valley Improvement Act ( Figure 1 shows this potential area of effect).

California is well known for its varied habitats; the Central Valley in particular was historically one of the most biologically diverse areas in North America. But many of the biological resources of these areas have been reduced or severely degraded by human activities. Impacts include the inundation of thousands of acres of upland, wetland, and riparian habitats by large reservoirs; degradation of wetland, riparian, and aquatic habitats downstream from reservoirs due to changes in both quantities and timing of river flows; and conversion of upland and wetland habitats for agricultural, municipal, and industrial uses. Although the Central Valley remains biologically diverse, the present-day condition of indigenous fish and wildlife and their habitats can be described only as poor. As much as 80 and even 90 percent of some habitat types, such as wetlands and riparian forests, have been lost, and dozens of species have been listed or proposed for listing as threatened or endangered, or are considered candidates for listing. Other species and habitats demonstrate downward trends that if left unchecked, could lead to similar results.

### 1.2 Goals and Objectives

The primary goal of the Conservation Program is to implement an aggressive adaptive management program that will protect, restore, and enhance special-status species and their habitats in areas directly or indirectly affected by the CVP, especially in the Central Valley and in other areas where CVP water is delivered.

The objectives of the Conservation Program are to:

- Address the needs of threatened and endangered species in an ecosystem-based manner
- Assist in the conservation of biological diversity
- Improve existing conditions for threatened and endangered species and reduce conflicts with future projects

Meeting these objectives would help ensure that current and future operations of the CVP will not jeopardize the existence of any species.

## **2.0 BACKGROUND**

The concept for a CVP Conservation Program was developed in 1991 during the section 7 consultation between Reclamation and the Service for the renewal of the Friant Division water contracts. As a result of this consultation, Reclamation and the Service developed the San Joaquin Valley Endangered Species Recovery Program to address endangered species issues in the San Joaquin Valley. As part of this consultation and a subsequent consultation on interim renewal contracts, Reclamation agreed to address endangered species issues throughout the area affected by the CVP.

In the summer of 1995, the Assistant Regional Directors of the Service and Reclamation, and their staffs, met with the goal of developing a mutually acceptable approach for addressing endangered species issues in the CVP service areas. The agencies agreed that:

- A CVP Endangered Species Act (ESA) Team consisting of staff from both the Service and Reclamation would develop and implement a CVP Conservation Program
- The Conservation Program would be based on (1) the needs of threatened and endangered species in the area affected by the CVP and (2) the opportunities available to Reclamation and the Service to address these needs (rather than on an accounting of the specific impacts of the CVP)
- The Conservation Program, along with other initiatives, would help ensure that the existing operation of the CVP, implementation of the Central Valley Project Improvement Act (CVPIA), and renewal of CVP water service contracts would not jeopardize listed or proposed species or adversely affect designated or proposed critical habitat

## **3.0 IMPLEMENTATION**

This section briefly describes the implementation process for the Conservation Program, which will be guided by these principles:

- Implementing actions will respond directly to biological needs
- Highest priority needs will generally be addressed first
- Priorities and needs, and thus the implementation plan, will change over time
- The Conservation Program will identify actions for implementation mainly by synthesizing existing information about needs and specific actions rather than by duplicating other efforts and developing information on its own. However, there may be some issues where existing information is not available, and the Conservation Program will develop new information
- Actions will be implemented through other ongoing programs and with partners when possible

### **3.1 Identification of Threatened and Endangered Species**

The Conservation Program will address primarily threatened and endangered species. However, a secondary focus will be other special-status species that are listed as threatened or endangered pursuant to the California Endangered Species Act, and species proposed for listing pursuant to either the federal or state act. In addition, species that are candidates for listing pursuant to the Federal act, species on the Service's list of species of special concern, species listed as rare under California law, species of special concern according to California Department of Fish and Game(CDFG), and other species with compelling biological needs may be appropriate special status species for the Conservation Program.

The Service has developed a list of all special status species in the potential area of concern (figure1). The list includes 1320 species of which 275 are federally listed, proposed or candidate species. Species may be added to or removed from this list by the technical team based on new information or as species needs are met by program actions.

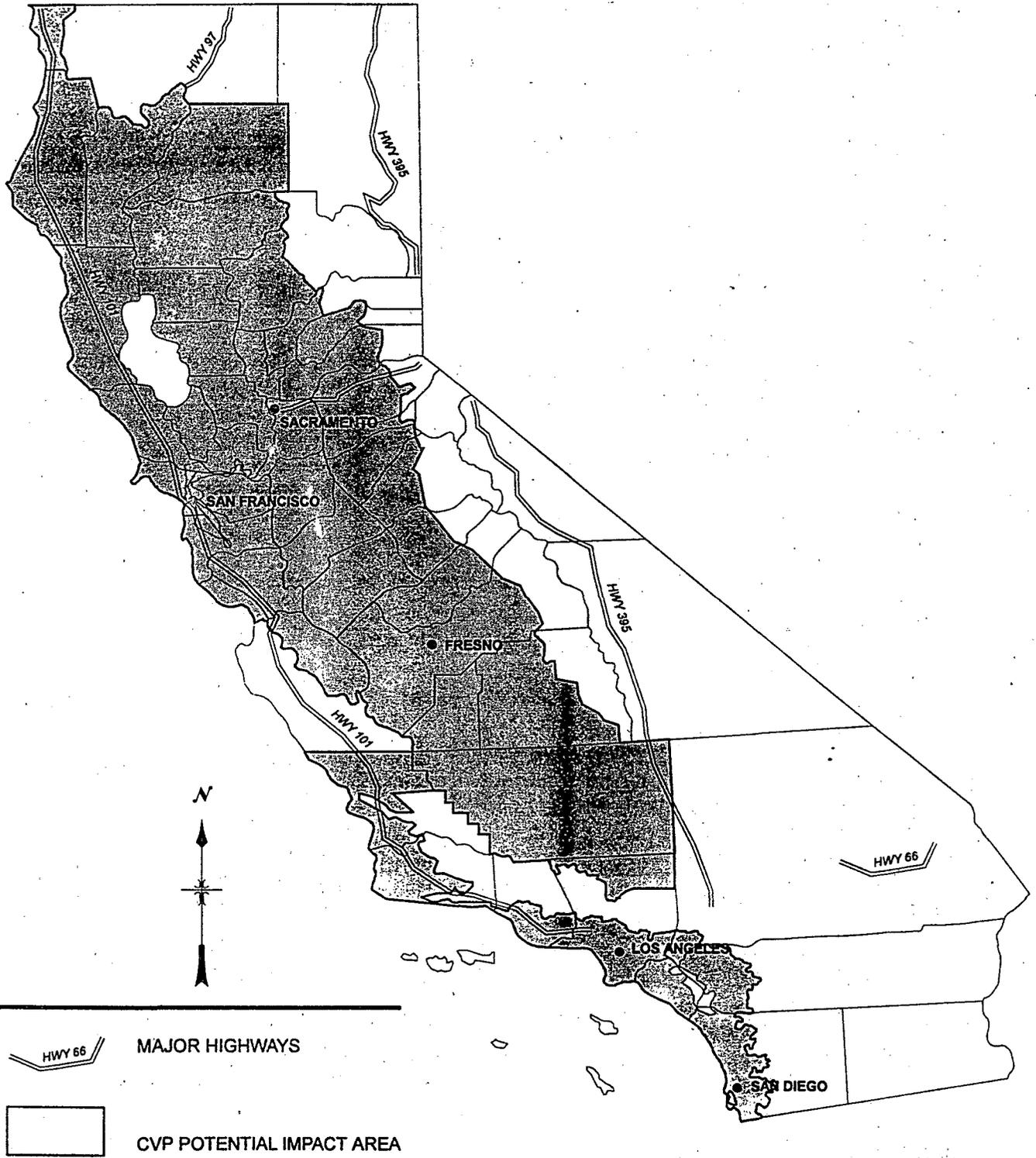
### **3.2 Identification of High-Priority Species**

To narrow the range of actions considered each year to a manageable level, a list of high-priority species will be developed. An initial list (near-term priority) consists of those species identified as having high-priority needs in the consultations for both the interim renewal and Friant Division contracts. As the highest priority needs of these species are met, it may be appropriate to add new species to the list. The list of priorities will be refined through review of information from habitat-based data, recovery plans, listing packages, habitat conservation plans, other consultations, or monitoring programs.

### **3.3 Identification of Ecological Needs**

The ecological needs of the high-priority species will be identified and compiled, largely from existing information developed by the Service, CDFG, other public agencies, and private sources. Factors responsible for the decline of the species will be identified. The ecological needs

**FIGURE 1**  
**Potential Threatened and Endangered Species Impact Area**  
**for the Central Valley Project**



will be ranked and if possible, the most important limiting factors will be identified for each species or habitat.

This task has been largely completed for the species on the initial near-term priority list; these species' needs were identified during the Friant Division and interim renewal contract consultations. As other species are added to the list of priority species, information about their needs can be developed from listing packages, recovery plans, or other sources.

### **3.4 Identification of Options to Address these Needs**

Options to address the ecological needs, especially critical needs or limiting factors, will be developed. Most options will have been identified in other efforts; however, with the help and input of the general public and stakeholders, the Conservation Program may identify new options.

### **3.5 Specific Action Proposals**

Specific action proposals, developed by the Service, Reclamation, submitted by others, will be used to meet the needs of the species or habitat. Each proposal will include (1) the biological objectives (ideally, quantified) of the action, (2) specific measures to be implemented, (3) a description of the potential for success, (4) a monitoring plan including considerations for quality control, (5) evaluation criteria to determine whether the action is successful, (6) an implementation schedule, and (7) funding requirements. Appendix A is an example of an action proposal.

### **3.6 Selecting Actions for Implementation**

On an annual basis, action proposals not previously selected for implementation will be evaluated on the basis of (1) biological need (for example, actions that address a species' limiting factor will have a higher score than an action that addresses lower priority needs), (2) technical and economic feasibility, (3) institutional considerations (for example, implementation of a particular action may require the participation of specific partners; lack of participation by needed partners may result in receiving a lower score), and (4) ancillary benefits, which may be other biological benefits (for example, an action that would benefit an entire guild or ecological community would have a higher priority than another action that addressed the same target need but would have no other biological benefits), social, or economic benefits.

### **3.7 Implementation/Evaluation of Specific Actions**

Once funds are available for a specific action, it will be implemented. In general, implementation may be accomplished directly by, or through contract with, the Service or Reclamation or through an outside agency or private contractor. The success of each action, and of the Conservation Program as a whole, will be evaluated each year. Either the action or the Conservation Program may be modified based on the results of this annual evaluation.

### **3.8 Monitoring**

An overall monitoring program will be developed to provide information on the status and success of ongoing action plans. It will assist the technical team in revising priorities for future activities.

### **3.9 Funding**

Funding sources for specific actions will include the regular budgets of the Service and Reclamation and may include the Restoration Fund established by the CVPIA. The Conservation Program will also seek outside sources of funding through other agencies and private foundations where the goals of the Conservation Program converge with the goals of the funding program.

## **4.0 PARTNERSHIPS AND PUBLIC PARTICIPATION**

The Service and Reclamation recognize that development and use of partnerships is a vital component to effective use of funds and staff toward meeting the goal of the Conservation Program. The Conservation Program will make every effort to implement specific programs in partnership with other involved agencies, organizations, and the public to maximize the use of available funds.

These partnerships could take many forms, such as providing information or loans to other Federal, State, or local agencies involved in implementing actions to benefit threatened and endangered species in the project area, or providing seed funds to a local agency or association of governments preparing a habitat conservation plan (HCP). By providing seed money to initiate the implementation of the HCP, the Conservation Program may achieve its goals (and the goals of the HCP) more quickly, or implement actions that otherwise could not be implemented. Partnerships will be especially important where they can leverage the limited resources of the Conservation Program to address needs that would otherwise be unmet.

In addition to seeking partnerships for implementation of specific actions, the Conservation Program will promote public participation activities that will help shape effective management of the program. The objectives of the public involvement program are to:

- Effectively communicate the goals and objectives of the Conservation Program
- Solicit public input on specific aspects of the Conservation Program, including key decision making steps
- Clearly explain the issues and activities in the Conservation Program
- Provide both general and technical information to interested groups and individuals

The target audiences of the public participation program are diverse and include:

Political/government interests	Environmental interests
Fisheries groups	Wildlife organizations
Agricultural interests	Urban water users
Business/Community interests	Water policy groups
Native Americans	Public interest groups
General public	Media
Recreation interests	Wildlife preserve neighbors

## 5.0 PROGRAM STRUCTURE

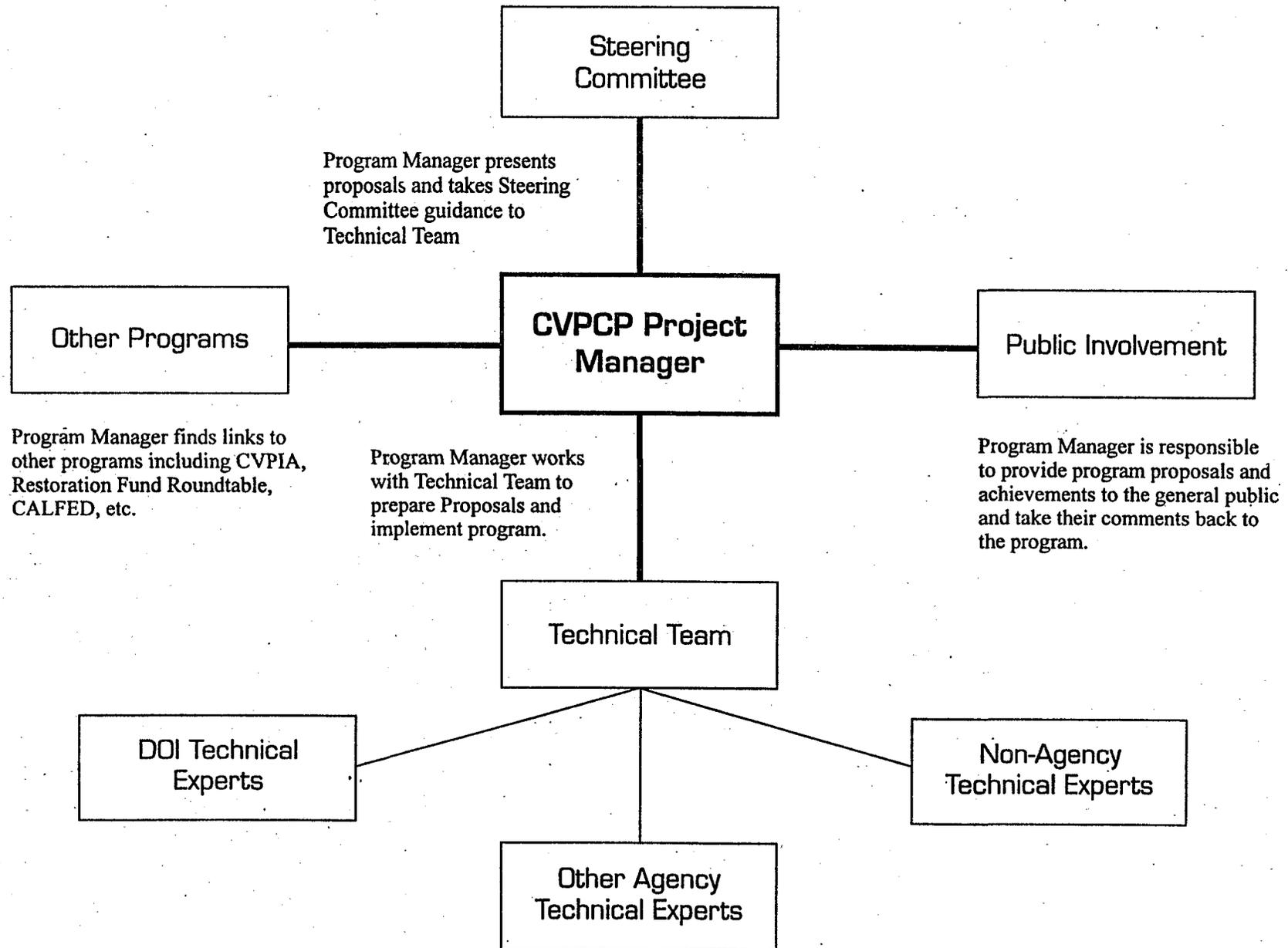
The CVP Conservation Program will be implemented through an organizational structure as shown in figure 2 and outlined in appendix B. This structure includes a Program Manager, a Technical Team, and a Steering Committee.

The Program Manager administers the Conservation Program and makes the day-to-day decisions to ensure a smooth-running and cohesive program. In addition, the Program Manager is the focal point for all contact with the public. Finally, the Program Manager serves as the coordinator for the exchange of information among the Technical Team, the Steering Committee, other existing related programs both within and outside the Department, interested parties, the general public, and decision makers. The Program Manager is the only full time person associated with the program.

The Technical Team will be made up of representatives of the Service, Reclamation, National Marine Fisheries Service (NMFS), and CDFG. The Technical Team will have the primary responsibility of identifying near-term high-priority species, identifying specific actions to address the needs of these species, evaluating and ranking these actions, and providing technical input throughout the planning process. Additionally, the Technical Team will participate in establishing the program goals and objectives, provide planning and implementation activities for CVPCP actions, and establish a general monitoring protocol to determine program effectiveness. Membership in the Technical Team will be based on expertise in ecology and the special status needs of species and their habitats addressed by the Conservation Program, and expertise in addressing these needs. The Northern California Area Office, South-Central California Area Office, and Southern California Area Office of Reclamation will each provide part time staff on an annual basis, to the Technical Team. The Service will provide two part time staff to serve on the Technical Team.

The Steering Committee will provide, when necessary, policy direction and guidance, and resolve management issues. The Steering Committee may assist with (1) determining the goals and objectives of the long-term program, (2) identifying priorities for the Conservation Program based on policy direction, (3) identifying and resolving policy issues among the participating agencies, and (4) coordinating within their agencies to help streamline the Conservation Program and facilitate its implementation. Members of the Steering Committee should serve as advocates for the Conservation Program within their respective agencies. The Steering Committee will be comprised of management or senior staff from Reclamation, the Service, NMFS, and CDFG.

Figure 2. Central Valley Project Conservation Program (CVPCP)



**Appendix A. Central Valley Project Improvement Act, Section 3406(b)(1):  
Mitigation for Other CVP Impacts - FY 97 Scope of Work #10 - Gabbro Soil  
Plant Species (June 1996)**

**1. Project:** Acquisition of habitat for endangered and threatened plants. One million dollars in funding to complement other State, Federal and local mitigation funds to purchase priority habitat within the Pine Hill Ecological Reserve in El Dorado County. Funds would be used to protect an extremely rare natural community tracked by the California Natural Diversity Data Base and designated Significant Natural Areas ELD#003, #004, #005 and #007. These areas contain eight (8) rare plant taxa, including five federally listed plants, one of the largest concentrations of rare plants in California. The five federally listed plant species are:

Stebbins' morning-glory	<i>Calystegia stebbinsii</i>
Pine Hill ceanothus	<i>Ceanothus roderickii</i>
Pine Hill flannelbush	<i>Fremontodendron californicum</i> ssp. <i>decumbens</i>
El Dorado bedstraw	<i>Galium californicum</i> ssp. <i>sierrae</i>
Layne's butterweed	<i>Senecio layneae</i>

**2. Type of Project:** Habitat acquisition

**3. Description of Activities**

**Background:**

Stebbins' morning glory, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado bedstraw, and Layne's butterweed occur primarily on the Pine Hill gabbro formation, an area of approximately 25,700 acres in Western El Dorado County, California. They primarily grow in "Gabbroic Northern Mixed Chaparral", a community that is restricted to the Rescue stony loam soils of western El Dorado County, in the Pine Hill area. The Pine Hill gabbro soil formation also includes eighteen additional plant species restricted to gabbro or serpentine soils. Seven hundred forty (740) distinct plant species have been recorded from the Pine Hill gabbro formation and adjoining serpentine and metamorphic rocks. This means that approximately 10% of the native plant species known from California are represented within this tiny fraction of the State, making it a nationally-significant site of species diversity. At least 80 percent of the occurrences for the five federally listed plant species are on private land.

The primary threat facing these five species and their associated habitat is the ongoing and threatened destruction and modification of habitat by one or more of the following—urbanization and its ensuing habitat fragmentation, road construction and maintenance, off-road vehicle use, grading, and mining. Nearly all the remaining occurrences of the five species are threatened by destruction of habitat through residential or commercial development. The human population of the four counties just east of the Sacramento metropolitan area (Nevada, Placer, El Dorado, and Amador) increased 375 percent between 1960 and 1992. El Dorado County, which has a projected population growth of 54 percent between 1990 and 2005, is one of the most rapidly growing counties in California.

It is estimated that at least 50 percent of the Pine Hill intrusion is within the El Dorado Irrigation District (EID) service area. The residential and commercial development that has significantly impacted and is currently impacting the habitat of the five federally listed plant species receives water through CVP contracts. Action is needed due to the imminent commercial and residential development threatening these species, especially in the southern portion of the Pine Hill intrusion.

Attempts have been made to establish a preserve system to protect the gabbro plant habitat in El Dorado County. An initial report on preserve sites and rare plant strategies, completed in November 1991, identified 12 potential sites. In 1992, El Dorado County held public workshops concerning this report. A rare plant advisory committee, consisting of members from the development community, various agencies (CDFG, BLM, Service), El Dorado County Planning Staff, the California Native Plant Society, the American River Conservancy and others was established to identify feasible preserve sites, funding mechanisms, and management strategies for these preserves. The rare plant advisory committee identified five preserve sites: three main preserve sites—Salmon Falls, Pine Hill, and Cameron Park/Shingle Springs—and two smaller satellite preserve areas—Martel Creek and BLM. Five preserve sites were identified in order to protect more than one population of each species, to protect against catastrophic loss at any one site, maintain genetic diversity within the rare plant species, and preserve a representation of the geographic range, diversity of plant associations, and other potentially important site-specific conditions associated with the rare plants. The County Board of Supervisors evaluated the preserve sites recommended by the rare plant advisory committee and eliminated the large Cameron Park/Shingle Springs southern preserve site. It approved in principle two other large preserve sites and the two small satellite sites; however, the majority of the Board would not consider any local funding to establish or maintain the preserves.

#### **Project Activities:**

The proposed project is the acquisition of habitat for endangered and threatened plants. Project funds, complemented by other Federal, State, and local mitigation funds, would be used to acquire the Cameron Park Unit of the Pine Hill Ecological Reserve. The proposed Pine Hill Ecological Reserve has a total of 3,450 acres. The proposed reserve is divided into five units because the rare plants occur in disjunct, isolated concentrations, with no single unit containing all of the rare plant species.

#### **4. Tasks**

- A. Assist in the acquisition of the Cameron Park Unit

#### **5. Products - Acquired habitat**

#### **6. Funding:**

The total estimated cost of completing the 3,450 acre Pine Hill Ecological Reserve system of five (5) units is \$13,220,000. The \$1,000,000 from the CVPIA B-1 other program would go toward

the acquisition of the Cameron Park Unit. The following table summarizes the current acquisition status and expected costs for the completion of each of these five (5) units.

Pine Hill Ecological Reserve (3,450 acres)

1.	Salmon Falls Unit (1,765 acres)		
	Existing public lands (BLM & CDFG)	655 acres	
	Lands to be dedicated by development agreement (Kanaka & Sweetwater)	800 acres	
	Value of dedication: 800 acres x \$4,000/acre	Value of dedication:	\$3,200,00
	Lands to be acquired: 210 acres x \$4,000/acre		\$840,000
2.	Pine Hill Unit (700 acres)		
	Existing public lands (CDFG)	360 acres	
	Lands to be acquired:	340 acres x \$7,000/acre	\$2,380,200
3.	Martel Creek Unit (400 acres)		
	Existing public lands (BLM)	200 acres	
	Lands to be acquired:	200 acres x \$4,000/acre	\$800,000
4.	Cameron Park Unit (400 acres)		
	Lands to be acquired:	400 acres x \$23,809/acre	\$9,523,600
5.	Penny Land Unit (185 acres)		
	Existing public lands (BLM)		
	Lands to be acquired: None		\$0
	Total Project Costs (Pine Hill Ecological Reserve)		\$16,743,600

The acquisition of project lands will occur with the proposed funding contributions from the following sources:

1.	Mitigation funding provided by El Dorado Irrigation District through a water meter and water service surcharge.	\$5,000,000
2.	800 acres will be dedicated by the Kanaka Valley and Sweetwater projects through development agreement Value of dedication: 800 acres x \$4,000/acre	\$3,200,000
3.	Building and subdivision impact fees assessed by El Dorado County Planning and Building departments	\$1,670,000
4.	Lands to be acquired by the BLM through a lands exchange	\$1,000,000
5.	Grants administered by the Wildlife Conservation Board	

through the "Significant Natural Area Program"			\$ 9 0 0 , 0 0 0
6. Environmental Enhancement and Mitigation Grant (2.6%)			\$ 3 5 0 , 0 0 0
7. Grants administered by the State Legislature under SB900 (Proposition 204) - River Parkway funds			\$ 1 0 0 , 0 0 0
Subtotal - Other Contributions (92.43%)			\$12,220,000
8. Central Valley Project Improvement Act (CVPIA, (b)(1) "other") program. (11%)			\$1,000,000
		FY97	\$ 5 0 0 , 0 0 0
		FY98	\$ 5 0 0 , 0 0 0
Total Project Costs			\$16,743,600

## 7. Schedule

### Project Completion Schedule

As of November 26, 1996 the project completion schedule presented below is the schedule of acquisitions and dedications that we can most reasonably expect to occur at this time.

#### May, 1997

48 acres acquired in the Salmon Falls Unit with SB-900 funds. Willing seller, contract completed.

#### July-August, 1997

600 acres (conservation easement) within the Salmon Falls Unit dedicated by Kanaka Valley Associates. Development agreement between El Dorado County, Department of Fish and Game and the Developer has been conceptually approved.

#### November, 1997

30 acres acquired in the Pine Hill Unit with a partial allocation of EEM grant funds. Willing seller, contract completed.

#### February, 1998

400 acres acquired in the Cameron Park Unit with funding provided by the following sources: remaining balance of EEM grant funds, CVPIA; (b)(1) "other" program, Mitigation Funding provided by the El Dorado Irrigation District and El Dorado County. Willing seller, contract not yet completed.

May, 1998

200 acres acquired in the Martell Creek Unit through a Bureau of Land Management Land Exchange. Willing sellers, contract not yet completed.

All other parcels acquired on an ongoing basis through funding provided by El Dorado County mitigation impact fee income and funding from the Wildlife Conservation Boards' Significant Natural Area Program.

**8. Contacts:**

USFWS: Marie Sullivan or Kirsten Tarp at 916-979-2760 and 916-979-2120, respectively  
BR: Chuck Solomon at 916-978-5044

## Appendix B. Central Valley Project Construction Program Program Outline

### 1. CVPCP Program Manager

#### CVPCP Technical Team

- 1.1 Coordinates and participates in Technical Team efforts to clarify the long-term program goals and objectives as they exist within the current draft CVPCP outline document.
- 1.2 Coordinates and participates in Technical Team processes to evaluate, select, and prioritize annual project proposals.
- 1.3 Implements appropriate provisions of the annual work plan through the Technical Team.

#### CVPCP Steering Committee

- 1.4 Presents Technical Team recommendations for long-term program goals and objectives to the Steering Committee.
- 1.5 Presents Technical Team recommendations for annual work plans to the Steering Committee.
- 1.6 Receives guidance and ultimate approval from the Steering Committee which is then provided to the Technical Team.

#### Public Relations Activities

- 1.7 Coordinates all public involvement programming associated with the CVPCP including an annual report to the public.

#### Other Duties

- 1.8 Writes Cooperative Agreement(s) (i.e., MOU's) to implement the CVPCP.
- 1.9 Participates in Endangered Species Act section 7 consultation associated with continued operation of the CVP and implementation of the CVPIA.

## **2. CVPCP Technical Team Responsibilities**

### General Technical Team

Participants-May change to reflect need for various disciplines

- Fish and Wildlife Service staff with expertise in applicable areas
- Bureau of Reclamation Staff with expertise in applicable areas
- Other Agency Staff (CDFG, NMFS, BLM, etc.) with experience in applicable areas

### Duties

- 2.1 The Technical Team, including the Program Manager, will add specificity to the goals and objectives found in the draft CVPCP outline document.
- 2.2 Receive, appraise, and prioritize project proposal from outside the Technical Team.
- 2.3 Develop proposals from within the Technical Team.
- 2.4 Provide information for both long- and short-term projects to the CVPCP Steering Committee through the Program Manager.
- 2.5 Subsequent to Steering Committee approval and Program Manager guidance, the Technical Team provides planning, including NEPA and CEQA, and appropriate implementation activities for CVPCP actions. Implementation could include hands on efforts, or the coordination of other agency, consultant, or public individuals and organizations.
- 2.6 The Technical Team will set up appropriate monitoring efforts to determine program effectiveness.

## **3. CVPCP Steering Committee Responsibilities**

### Participants

- Representation from Bureau of Reclamation Regional Office
- Representation from Fish and Wildlife Service Sacramento Field Office, Division-level
- Representation from National Marine Fisheries Service
- Representation from California Department of Fish & Game

### 3.1 Long-term planning meetings

- a. The Steering Committee will participate in meetings to concur/determine the best goals and objectives for the long-term CVP Conservation Program as would be proposed in section 2.
- b. This long-term period will be for 5 years at the end of which, through reevaluation and adaptive management, a new long-term program will be determined.

### 3.2 Annual meeting prior to budget submissions

- a. Review project proposals created within the Technical Team and presented by the Program Manager.
- b. Selects and/or concurs with selected proposals and prioritizations determined by the Technical Team and presented by the Program Manager.

