

**FINAL ENVIRONMENTAL ASSESSMENT
FOR THE
LONG-TERM CONTRACT RENEWAL
SHASTA AND TRINITY RIVER DIVISIONS**



Prepared for:
U.S. Bureau of Reclamation
Mid-Pacific Region-Shasta Division
Northern California Area Office
16349 Shasta Dam Boulevard
Shasta Lake, California

March 2005

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE
RENEWAL OF THE LONG-TERM WATER SERVICE CONTRACTS
FOR THE SHASTA AND TRINITY RIVER DIVISIONS CONTRACTORS**

INTRODUCTION

The Mid-Pacific Region of the Bureau of Reclamation (Reclamation) has found that an environmental impact statement is not required for the proposed execution of the renewal of water service contracts for ten water service contractors of the Shasta and Trinity River Divisions.

The renewals will be for 25 years for two of the 10 water districts: Bella Vista Water District (BVWD), and Clear Creek Community Services District (CCCSD). The renewals for these two districts include both municipal & industrial (M&I) water and agricultural water, and will start in March 2005 and extend through February 2029.

The renewals will be for 40 years (March 2005 through February 2045) for eight of the 10 districts which use only M&I water. Those eight districts are: City of Redding, City of Shasta Lake, Shasta Community Services District (SCSD), Shasta County Water Agency (SCWA), Centerville Community Services District (CCSD), Keswick County Services Area (KCSA), Mountain Gate Community Services District (MGCS), and the U.S. Forest Service at Centimudi Marina (USFS).

BACKGROUND

The Central Valley Project Improvement Act (CVPIA) required completion of a Programmatic Environmental Impact Statement (PEIS) and further stipulated that Reclamation must perform appropriate environmental review for renewal of long-term water service contracts. The PEIS programmatically evaluated the implementation of the CVPIA, including long term contract renewal. The PEIS was completed in 2000 and a Record of Decision was signed in January 2001. Reclamation initially prepared a Draft Environmental Assessment (EA) in October 2000 to evaluate the potential beneficial and adverse environmental impacts associated with renewal of the long-term Shasta and Trinity River Division contracts. Three alternatives (including the No Action Alternative) were evaluated. Comments received during a public review of the October 2000 EA were included in a July 2004 updated Draft EA which was made available for an additional 30-day review. Following this last public review, a Final EA was prepared and is attached for reference.

Reclamation completed the EA process to determine if renewing the contracts would result in site-specific significant impacts to the natural or human environment. The EA process was completed pursuant to and in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 USC§4321-4370), the Council of Environmental Quality regulations on implementing NEPA (40 CFR Parts 1500-1508), and Reclamation Handbook (Bureau of Reclamation 1990).

The proposed action is the execution of separate long-term contracts between the United States and BVWD, CCCSD, City of Redding, City of Shasta Lake, SCSD, SCWA, CCSD, KCSA, MGCSD, and USFS consistent with the CVPIA.

Renewal of long-term contracts is needed to:

- Continue the beneficial use of water developed and managed as part of the CVP, with a reasonable balance among competing demands, including the needs of agricultural and municipal and industrial (M&I) users and the needs of fish, wildlife, recreation, and other water uses consistent with the requirements imposed by the California State Water Resources Control Board (SWRCB) and CVPIA.
- Incorporate certain administrative conditions into the renewed contracts to ensure continued compliance with current Federal Reclamation law and other applicable statutes.
- Allow the continued reimbursement to the Federal government for costs related to the construction and operation of the CVP.

FINDINGS

In accordance with the NEPA, and its implementing regulations, and consistent with the environmental analysis of the EA for the Long-Term Contract Renewal for the Shasta and Trinity River Divisions, Reclamation finds that implementation of the proposed action will result in no significant impact to the quality of the human environment. The finding is supported by the following factors:

1. **Water Resources:** Renewal will not alter the supply or quantity of CVP water assigned to the water contractors under their existing water service contracts and will not change CVP water operations. Therefore, the proposed action would have no effect on total water supply or operations of the CVP and thus no related changes to the environment.
2. **Land Use:** There are no landuse changes arising from Reclamation's discretionary action. The proposed long-term water service contracts do not include development of any physical facilities and structures. Essentially the same amount of water will be provided to the same areas for established uses. Any landuse changes that would occur in the service areas would occur under the no action alternative. In addition these type land uses are largely governed by Shasta County's General Plan or the City of Redding's General Plan.
3. **Biological Resources:** There would be no significant effect on biological resources as a result of the proposed action. There are no landuse changes proposed as part of the action that could affect biological resources. In addition, water quantities would not change, the same amount of water will be provided to the same areas for the same uses as would occur under the no action alternative.

4. Threatened and Endangered Species: There would be no significant effect on any species listed pursuant to the Endangered Species Act (ESA). Any impacts that may occur will be reduced to insignificance by full compliance with ESA requirements provided in consultation documents. Reclamation has completed required ESA compliance procedures with both the Fish and Wildlife Service and National Oceanic and Atmospheric Administration-Fisheries.
5. Cultural Resources: Contract renewal will have no effect on cultural resources. The action includes no new structures such as dams, canals, or reservoirs, construction activities, or physical changes to the environment and would therefore will not affect prehistoric, historic, or traditional cultural properties.
6. Recreation Resources: The proposed action will not cause changes in historic CVP operations that determine reservoir shortage or the amount or timing of water deliveries. Therefore no impacts to recreational resources are anticipated.
7. Demographics and Environmental Justice: Because the proposed action is essentially maintaining the status quo it not have an adverse effect on human health or the environment, as defined by environmental justice policies and directives. The proposed action will not disproportionately affect any socio-economic or low-income groups. Renewal of the contracts maintains the socio-economic conditions in the area by providing water needed for agricultural and other enterprises, thus maintaining employment opportunities.
8. Indian Trust Assets: No Indian Trust Assets occur within the Contractors' service areas. Therefore, no direct or indirect impacts to Indian Trust Assets are anticipated.
9. Economic Resources: Renewal will have limited socio-economic impact, even though costs will increase. M&I water users are relatively *price inelastic*; that is, they change their use of water relatively little in response to even fairly substantial changes in the price of water. Similarly, large scale farming operations are not expected to change relative to changes in water rates. Change of the threshold of a presumption of agricultural use from a 2- to a 5-acre minimum will not significantly affect farmers. Upon documentation of a farming operation, the smaller acreage would qualify for agricultural rates. These economic changes do not result in any significant changes to the environment

Information about the updated Draft EA prepared for the proposed action or this Draft FONSI may be obtained from Buford Holt, Bureau of Reclamation, at 530-275-1554.

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION**

MID-PACIFIC REGION

**NORTHERN CALIFORNIA AREA OFFICE
SHASTA LAKE, CALIFORNIA**

FINDING OF NO SIGNIFICANT IMPACT

Long -Term Contract Renewal
Shasta and Trinity River Divisions
Central Valley Project

Sacramento, California

FONSI NO. xx-00-00

Recommended:

Environmental Specialist
Northern California Area Office

Date

Approved by:

Area Manager
Northern California Area Office

Date

Concurred by:

Regional Environmental Officer
Mid-Pacific Region

Date

Final
**ENVIRONMENTAL ASSESSMENT
FOR THE
LONG-TERM CONTRACT RENEWAL
SHASTA AND TRINITY RIVER DIVISIONS**

**Contract No. 01CS20210D
Order No. 01A920210D**

Lead Agency:

U.S. Bureau of Reclamation
Mid-Pacific Region-Shasta Division
Northern California Area Office
16349 Shasta Dam Boulevard
Shasta Lake, California

March 2005

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PREFACE

This document is the Final Environmental Assessment (Final EA) for the Long-Term Contract Renewal, Shasta and Trinity Rivers Divisions which must be considered prior to approving a Finding of No Significant Impact (FONSI). Under the National Environmental Policy Act (NEPA), the U.S. Bureau of Reclamation (Reclamation) must consider this EA before approving or rejecting the contract renewals (project).

The Final EA includes all corrections and additions to the EA text made as a result of comments made on the Draft EA and the Updated Draft EA. Any changes to the text are indicated by revision marks (underline for new text, ~~strike-out~~ for deleted text). The Draft EA was published in October 2000, and the Updated Draft EA was published in July 2004. Appendix F to this document provides a list of commenters, copies of written comments (numerically coded for reference), and Reclamation's responses to those comments.

No significant environmental issues beyond those already covered in the EA were raised during either the 30-day comment period for the Draft EA or the 30-day comment period for the Updated Draft EA. Comments received on the EA did not indicate new significant impacts or significant new information that would require recirculation of the EA pursuant to NEPA, but it was updated and recirculated because of the time lapse between the completion of the EA and the completion of negotiations and Endangered Species Act consultations.

CHAPTER 1

PURPOSE AND NEED

1.1 INTRODUCTION

This environmental assessment (EA) evaluates the potential effects and benefits of long-term renewal of water contracts for 10 water service Contractors (Contractors) that receive water from the Shasta and Trinity River Divisions of the Central Valley Project (CVP). Contract renewals would allow continued CVP water delivery to the Shasta and Trinity River Divisions' service areas.

The CVP is the largest water storage and delivery system in California, covering 35 of the state's 58 counties. Authorized by Congress in 1935, the CVP is divided into nine divisions, including the Shasta and Trinity River Divisions. These divisions catch and channel southward the headwaters of the network of CVP waterways. Shasta Dam, the main feature of the Shasta Division, was authorized in the same legislation that authorized the CVP and was completed in 1945. The Trinity River Division, which was authorized in 1955 and completed in 1964, stores, regulates, and diverts water from the Trinity River basin through a system of dams, reservoirs, tunnels, and power plants into the Sacramento River for use in other areas of the state.

The 10 water service Contractors that receive water from the Shasta and Trinity River Divisions are Bella Vista Water District (BVWD), Clear Creek Community Services District (CCCSD), City of Redding, City of Shasta Lake, Shasta Community Services District (SCSD), Shasta County Water Agency (SCWA), Centerville Community Services District (CCSD), Keswick County Services Area (KCSA), Mountain Gate Community Services District (MGCSA), and the U.S. Forest Service (USFS).

Assignments are expected to change this list before the contracts are renewed, but no physical changes will result. SCWA plans to assign water now subcontracted to MGCSA and BVWD to those districts. SCWA also plans to assign the KCSA (also known as County Service Area #25) water to itself. All three assignments will simply be administrative actions.

Depending on the Contractor, the U.S. Bureau of Reclamation (Reclamation) proposes to renew the water service contracts for agricultural and/or municipal and industrial (M&I) uses. Table 1-1 lists the existing Contractors and summarizes general information concerning the existing contracts. The renewal of these contracts would allow CVP water deliveries to the Shasta and Trinity River Divisions' service areas to continue.

1.2 PURPOSE AND NEED FOR THE FEDERAL ACTION

The Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575) included Title XXXIV, the Central Valley Project Improvement Act (CVPIA). The CVPIA amended the previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses, and fish and wildlife enhancement as a

**TABLE 1-1
SUMMARY OF EXISTING LONG-TERM WATER SERVICE CONTRACTORS
IN THE SHASTA AND TRINITY RIVER DIVISIONS**

Contractor Name	Shasta or Trinity River Division	Contract Number	Maximum Water Quantity of CVP Long- Term Contract Water (Acre-Feet)	CVP M&I Rate Assigned?	CVP Agricultural Rate Assigned?²	Post-CVPIA Expiration³
Bella Vista Water District	Trinity	851AIR3	24,000 (Includes 7,000 at Ag rate)	YES	YES	02/28/2001
Centerville Community Services District¹	Trinity	14062003367A-X	2,900	YES	NO	12/31/2004
City of Redding (Buckeye Contract)	Shasta	5272A	6,140	YES	NO	12/31/2009
Spring Creek Conduit	Shasta	5272A	Included	-	--	
Sacramento River	Shasta	5272A	Included	-	--	
Toyon Pipeline	Shasta	5272A	Included	-	---	
City of Shasta Lake Shasta Dam Area P.U.D. Summit City P.U.D.	Shasta	W11341R45	2,750 4,400 Included Included	YES	NO	2/28/2001
Clear Creek Community Services District	Trinity	489A1R35	15,300 (Includes 5,000 at Ag Rate)	YES	YES	2/28/2001
Shasta Community Services District	Trinity	862A	1,000	YES	NO	12/31/2000
Shasta County Water Agency	Shasta	3367A⁴	2,100⁴	YES	NO	12/31/2004
Others						
Keswick County Service Area	Trinity	1507A	500	YES	NO	12/31/2009
Mountain Gate Community Services District	Shasta	6998	350	YES	NO	12/31/2003
USFS (Centimudi Boat Ramp Marina)	Shasta	3464A	40	YES	NO	Indefinite
	Shasta	3464A	10	YES	NO	Indefinite
Total			55,05056,700			

NOTES

- Contract water for Centerville Community Services District was split from Shasta County Water Agency contract 3367A in 2001.
- YES= Agricultural Rate has been assigned. NO= Agricultural Rate has not been assigned.
- Only Bella Vista, Clear Creek CSD, and City of Shasta Lake have interim agreements. Other contractors signed binding agreements for early renewal.
- Shasta County WA principally subcontracts water to others; agricultural water not used since 1983. Refer to Note 1.

Figure 1-2 shows the general locations and the approximate service area boundaries of the contractors.

project purpose equal to power generation. Section 3404(c) of the CVPIA directs the Secretary of the Interior (Secretary) to renew existing CVP water service and repayment contracts following completion of a PEIS and other needed environmental documents by stating that:

“...the Secretary shall, upon request, renew any existing long-term repayment or water service contract for the delivery of water for a period of 25 years and may renew such contracts for successive periods of up to 25 years each ... (after) appropriate environmental review, including preparation of the environmental impact statement [the PEIS]....”

Section 3409 of the CVPIA required the Secretary to prepare an environmental impact statement (EIS) to evaluate the direct and indirect impacts and benefits of implementing the CVPIA. The resulting programmatic EIS (PEIS) was prepared pursuant to the National Environmental Policy Act (NEPA) by Reclamation and the U.S. Fish and Wildlife Service (USFWS). USFWS became the co-lead agency in August 1999. Reclamation released the Draft PEIS on November 7, 1997. An extended comment period closed on April 17, 1998. The PEIS provided a programmatic evaluation of the impacts of implementing the CVPIA. Four alternatives, 17 supplemental analyses, a Preferred Alternative, and a No Action Alternative were evaluated in the PEIS. The impact analysis in the PEIS was conducted at a subregional level but presented within the PEIS on a regional basis for the Sacramento Valley, San Joaquin Valley, and Tulare Lake regions. The PEIS No Action Alternative assumed that water service contracts would be renewed under the same terms as expiring contracts.

Reclamation and USFWS released the Final PEIS in October 1999. The Final PEIS included a Preferred Alternative that addressed the regional impacts and benefits of the general method that Reclamation anticipated for implementing the CVPIA, including long-term contract renewals. The Record of Decision (ROD) for the PEIS includes the renewal of long-term CVP water contracts at the programmatic level. However, renewal of the individual contracts requires that Reclamation prepare site-specific environmental documents that “tier” off the CVPIA; this EA constitutes the site-specific document for the Shasta and Trinity River Divisions. The purpose of this document is to evaluate the potential localized environmental impacts that may result from the proposed contract renewals, and, accordingly, provide the basis for a decision on how best to implement the CVPIA-specific objectives of renewed contracts at the individual or multi-district level.

Following completion of the Final PEIS, Reclamation prepared additional environmental documentation for renewal of long-term water service and repayment contracts, including this EA, to address the District-specific impacts and a Draft Biological Assessment/Essential Fish Habitat Assessment (BA/EFHA) (August 2003) to address species impacts (under the Federal Endangered Species Act), both of which relate to contract renewals within the Shasta and Trinity River Divisions.

The purpose of this project is to renew Shasta and Trinity River Divisions’ water service contracts, consistent with section 3404(c) of the CVPIA. The EA considers the potential environmental impacts of implementing long-term contract renewals between Reclamation and the 10 water service districts of the Shasta and Trinity River Divisions. This EA considers the incremental impacts, whether direct or indirect, of changes from the existing/interim contracts. The alternatives differ by terms and conditions of

the contracts, including tiered water pricing. A table that summarizes the major provisions of the existing contracts and the May 2003 proposed long-term contracts, including elements unique to irrigation water, is included as **Appendix A**.

Long-term contract renewals are needed to:

- Allow continued beneficial use of the water developed and managed as part of the CVP, with a reasonable balance among competing demands, including the needs of agricultural and municipal and industrial (M&I) users and the needs of fish, wildlife, recreation, and other water uses consistent with the requirements imposed by the California State Water Resources Control Board (SWRCB) and CVPIA.
- Incorporate certain administrative conditions into the renewed contracts to ensure continued compliance with current Federal Reclamation law and other applicable statutes.
- Allow the continued reimbursement to the Federal government for costs related to the construction and operation of the CVP.

1.3 AUTHORITIES FOR CENTRAL VALLEY PROJECT WATER SERVICE CONTRACT RENEWALS

Reclamation is responsible for operational control of the CVP, including securing payment for capital and for operations and maintenance (O&M). These costs are established in the individual water service contracts with the Federal government. In addition, as a duly authorized representative, Reclamation administers all actions pertaining to the establishment of water service contracts on behalf of the Secretary of the Interior, as set forth under the following laws:

- Public Law 88-44, Reclamation Project Act of 1939, provided for repayment of construction charges and authorized sale of CVP water to municipalities and other public corporations and agencies. This act required the Secretary to comply with laws of the State relating to the control, appropriation, use, or distribution of water used in irrigation or vested rights acquired thereunder.

Under PL 88-44 the Secretary was required to provide renewal, upon request of the other party, of any long-term contract for municipal, domestic, or industrial water supply. The contract renewal would be subject to renegotiation of: (1) the charges set forth in the contract in the light of circumstances prevailing at the time of renewal; and (2) any other matters with respect to which the right to renegotiate is reserved in the contract. PL 88-44 also stated that the Secretary shall, upon request, provide in any such long-term contract that the other party to the contract shall, during the term of the contract and of any renewal (subject to fulfillment of other obligations), have a first right to a stated share or quantity of the CVP water supply available for municipal, domestic, industrial, or irrigation use.

- The Water Service Contracts Act of 1944 provided for delivery of specific quantities of irrigation and M&I water to Contractors. The Reclamation Project Act of 1956 provided the right of renewal of long-term repayment or water service contracts for agricultural Contractors for a term not to exceed 40 years. The Reclamation Project Act of 1963 provided the right of renewal of long-term repayment or water service contracts for municipal and industrial Contractors.

The CVPIA included a right of renewal of long-term repayment or water service contracts for a term not to exceed 25 years, but the Secretary may or may not renew such contracts for successive periods for terms not exceed 25 years.

1.3.1 NUMBER AND BREADTH OF CONTRACTS

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

1.3.2 DISCRETION UNDER CONTRACT AUTHORITIES/ RECLAMATION LAW TO CONTROL USE OF CONTRACT WATER

The statutes cited previously authorize Reclamation to determine the amount of CVP water to be made available to CVP water service Contractors subject to certain conditions, including but not limited to, the terms and conditions included within the applicable state water right permits/licenses; the amounts of water each Contractor can put to reasonable and beneficial use; for irrigation water, the number of acres of irrigable and eligible lands within the Contractor's boundaries that are also within the authorized CVP service area; and the places of use designated in the applicable CVP water right permits/licenses.

1.4 BASIS OF SHASTA AND TRINITY RIVER DIVISIONS WATER SERVICE CONTRACT RENEWALS

The Central Valley Project Authorization Act of 1937 authorized construction of the initial CVP project features for navigation, flood-control, water storage, construction of distribution systems, and hydropower generation. The River and Harbors Act of 1940 further authorized construction of CVP facilities and mandated that dams and reservoirs be used first for river regulation, improvement of navigation, and flood control; second for irrigation and domestic users; and third for power. This authorization was amended by the American River Division Authorization Act of 1949, Trinity River Act of 1955, San Luis Authorization Act of 1960, River and Harbors Act of 1962, and Auburn-Folsom South Unit Authorization Act of 1967. The Shasta Division was authorized under the ~~original CVP contract dated~~ Authorization Act of August 26, 1937, and the Trinity River Division was authorized separately under the Trinity Division, CVP Act of August 12, 1955.

Key provisions of the existing water contracts are summarized in Table 1-1, Summary of Existing Water Contracts, Shasta and Trinity River Divisions. Presently the Bella Vista Water District, Clear Creek Community Services District, and the City of Shasta Lake are receiving water under interim contracts that

~~expired~~ expire on February 28, ~~2001~~ 2006. The remainder of the Contractors signed binding agreements for early renewal.

The **Bella Vista Water District (BVWD)** is a publicly owned water agency formed in 1957 under California Water Code Division 13, Sections 34000 through 38501. BVWD entered into a contract with the Federal government on April 4, 1964, for the delivery of up to 24,000 acre-feet (total) of CVP water annually for agricultural and M&I uses.

The **Centerville Community Services District (CCSD)** is a community services district formed in 1959 under California Government Code, Division 3, Section 61000, et seq. CCSD entered into a contract with the Federal government in December 2001 for the delivery of up to 2,900 acre-feet (total) of CVP water annually for M&I uses. The water contract was a reassignment previously held by the Shasta County Water Agency.

The **City of Redding** is the largest city in Shasta County with a population of 78,490 (1995). Prior to 1941, water service within the City of Redding was provided by the California Water Service Company, whose water rights dated from 1886. The City of Redding acquired the local facilities and water rights of the company in 1941, and filed for additional appropriative water rights of 5 cubic feet per second (cfs) in 1944. Subsequent annexations to the City's service area included the Buckeye County Water District (1967), the Cascade Community Services District (1976), and the Enterprise Public Utility District (1977).

The City entered into a contract with the Federal government on February 22, 1994, for the delivery of up to 6,140 acre-feet of CVP water annually for M&I uses in the **Buckeye zone**. This agreement is separate and distinct from a 1966 Settlement Contract with Reclamation, under which the City obtains additional CVP water.

The **City of Shasta Lake** was incorporated in July of 1993, and receives ~~2,750~~ 4,400 acre-feet of water under interim contract number 1134, formalized on ~~March 3, 1994~~ February 27, 2004. Prior to incorporation, water was supplied to the area by the Shasta Dam Area Public Utilities District (SDAPUD) and the Summit City Public Utilities District (SCPUD).

The SDAPUD was formed in 1945 to supply water to workers constructing Shasta Dam. The original 276 acre-feet contract with the Federal government was entered into August 12, 1948. On September 15, 1955, the contract was amended to 375 acre-feet. In July of 1957, the contract was further amended to 3,225 acre-feet.

The original SCPUD contract with the Federal government was initiated on October 22, 1948, for 60 acre-feet. The contract was amended in July of 1966 (amount unknown) and again on December 9, 1975 to 1,170 acre-feet.

In 1978, the SDAPUD and SCPUD contracts were merged into one long-term contract. In 1988, when the earlier contracts expired, it was assumed that the long-term contract amount would be 4,400 acre-feet (the total of the two individual contracts). At the time, however, there was no right to renewal available, and the contract amount was set at 2,750 acre-feet, ~~for the term of the interim contract.~~

On September 15, 1993, the City of Shasta Lake assumed the merged contract. The contract subsequently expired and the city entered into ~~the March 1994~~ interim contracts beginning in March, 1994 for 2750 acre-feet. ~~The proposed existing interim renewal contract would~~ restored the original 4,400 acre-feet and the proposed renewal contract provides for the delivery of up to 4,400 acre-feet.

The **Clear Creek Community Services District (CCCCSD)** is a publicly owned water agency formed in 1961 under Trinity River Division Act of 1955. CCCSD entered into a contract with the Federal government on May 14, 1963, for the delivery of up to 15,300 acre-feet (total) of CVP water annually for agricultural and M&I uses.

The **Shasta Community Services District (SCSD)** was formed in June 1959, under the Community Services District Laws, Sections 61000 through 61934 of the Governmental Code of the State of California. The SCSD entered into a contract with the Federal government on March 25, 1964, for the delivery of up to 1,000 acre-feet of CVP water annually for M&I use.

The **Shasta County Water Agency (SCWA)** was formed in 1957 through Legislative Act 7580, Shasta County Water Agency Act. On June 30, 1967, the SCWA entered into a contract with the Federal government for the delivery of up to 5,000 acre-feet of CVP water annually (total) for agricultural and M&I uses. SCWA assigned 2,900 acre-feet to the Centerville Community Services District in 2001, and 1,000 acre-feet to Mountain Gate Community Services District on February 22, 2005. An assignment of 578.5 acre-feet to the BVWD is pending. The SCWA now supplies water to ~~Mountain Gate Community Services District (1,000 acre-feet), BVWD (578.7 acre-feet),~~ Jones Valley County Service Area (CSA) #6 (190 acre-feet), Crag View CSA #23 (119 acre-feet), Castella CSA #3 (77 acre-feet), and numerous smaller areas such as the Silverthorn development, French Gulch School, and Shasta Holiday MWC. The 500 acre-feet under the Keswick County Service Area (KCSA) would be merged with the SCWA during contract renewal.

The **Keswick County Service Area (KCSA)**, also known as County Service Area #25) was preceded by the Keswick Community Services District, which was formed in the early 1960s under the Community Services District Laws, Sections 61000 through 61934 of the Governmental Code of the State of California. In October 1990 the Keswick Community Services District was dissolved and reorganized as the KCSA under Sections 25210.1 through 25250 of the Governmental Code of the State of California. The KCSA, through its predecessor agency, entered into a contract with the Federal government on September 16, 1964 for delivery of up to 500 acre-feet of CVP water annually for M&I use.

The **Mountain Gate Community Services District (MGCSA)** was formed in 1956 pursuant to Government Code, Title 6, Division 3, Sections 61000 through 61800. The MGCSA entered into a contract with the Federal government on March 12, 1958, for the delivery of up to 350 acre-feet of CVP water annually for M&I use.

The **U.S. Forest Service (USFS)** (also known as the Centimudi Marina) entered into a contract with Reclamation on November 2, 1967, for delivery of up to 10 acre-feet of CVP water for M&I uses at the Centimudi boat ramp on Shasta Lake.

1.5 RELATION TO THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (CVPIA PEIS)

The PEIS provided a programmatic evaluation of the impacts of implementing the CVPIA. Four alternatives, 17 supplemental analyses, a Preferred Alternative, and a No Action Alternative were evaluated in the PEIS. The impact analysis in the PEIS was completed at a subregional level but presented within the PEIS on a regional basis for the Sacramento Valley, San Joaquin Valley, and Tulare Lake regions. The PEIS No Action Alternative assumed that existing water service contracts would be renewed under the same terms as expiring contracts. The Final PEIS included a Preferred Alternative that addressed the regional impacts and benefits of the general method that Reclamation anticipated for implementation of CVPIA, including long-term contract renewal, as described in Chapter 3 of this document.

Following completion of the PEIS, Reclamation prepared additional environmental documentation for renewal of long-term water service and repayment contracts, including this EA to address the site-specific impacts relating to contract renewals within the Shasta and Trinity Divisions.

1.6 STUDY AREA

The general location of the Shasta and Trinity River Divisions is shown in Figure 1-1, Regional Location and Project Vicinity. The study area for this EA is defined by the service area boundaries of the 10 service Contractors. The general service area boundaries of the 10 Contractors within the Shasta and Trinity River Divisions are shown in Figure 1-2. Appendix G provides the service area boundaries for each of the 10 Contractors. ~~The names~~ A Summary of the 10 Contractors ~~are~~ is provided in Table 1-1.

1.7 STUDY PERIOD

The analysis period for this EA is the term of each long-term contract included in this EA. Section 3404(c) of the CVPIA clearly indicates that 25 years will be the upper limit for long-term irrigation repayment and water service contracts within the CVP. However, Section 3404(c) did not amend the provisions of Section (9)(c) of the Reclamation Project Act of 1939 and the Act of June 21, 1963 which authorized renewal of M&I water contract terms for up to 40 years. These 1939 and 1963 authorizations remain in place as guidance for establishing the terms of M&I contracts.

1.8 ASSUMPTIONS FOR 40-YEAR IMPACT ANALYSIS

As discussed in Chapter 2, water-needs assessments (Needs Analyses) were performed for each long-term CVP contractor. Each needs analysis was predicated on the amount of water that would be beneficially utilized by year 2025, and was used to determine the long-term contract amount. The Needs Analysis showed that each contractor's future water demand equaled or exceeded their full contract amount at year 2025. (No interim time period conditions were considered or evaluated with respect to build-out

conditions or changes in the CVP contract). Thus, all environmental impacts associated with use of the full contract amount would be manifested at the end of the 25-year water-needs analysis period. Therefore, the initial analysis of impacts, prepared in 2000, covered a 25-year period.

Potential impacts that would occur from 2025 to contract year 40 (2044) were also considered. Because full use of contract supply would occur by 2025, all environmental effects within a contract area service related to contract renewals will have occurred by year 2025. Because the full contract amount would already be in use, any contract-renewal environmental effects occurring at year 2025 would not increase in magnitude or change in scope after that date.

If the amount of CVP water delivered changes after full build-out in year 2025, those changes in delivery would not be related to the contract renewal, but would be a result of changes in water allocations due to CVP-wide demands, hydrology, or reductions in the reliability of CVP water supply because existing water rights holders are more fully using their water rights. Any such changes in delivery would be decreases, not increases. Any decrease in the amount of CVP water delivered would not increase development of M&I service areas between 2025 and contract year 40. Any analysis of changes in actual water delivery after 2025 would be highly speculative, difficult to quantify, and minor in scope. Thus, Reclamation believes that an analysis of impacts in year 2025 covers the full range of impacts associated with a 40-year contract term to the M&I-only contractors.

1.9 PUBLIC INVOLVEMENT PROCESS

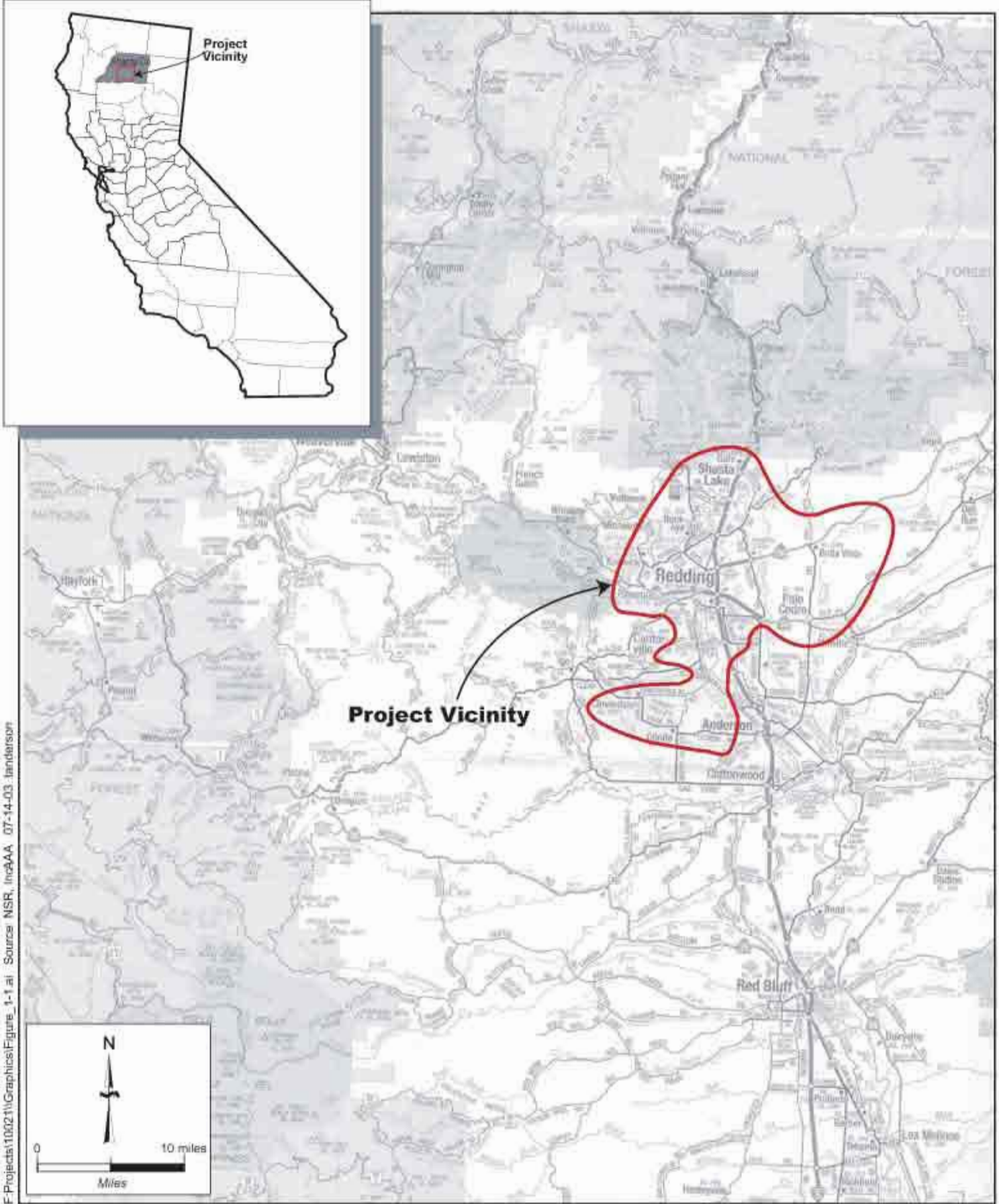
Reclamation started the preparation of this EA during the scoping phase for the CVPIA PEIS. Scoping served as a fact-finding process that helped identify public concerns about, and recommendations for, the NEPA process; issues that would be addressed in this EA; and the scope and level of detail for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

The long-term contract renewal process was conducted as a public process. Throughout the contract renewal process, meetings were held with Contractors, other agencies, interest groups, and the public (see Chapter 6). Issues raised during the public involvement process were addressed in the negotiations process and were used in the preparation of this EA.

1.10 RELATED ACTIVITIES

There are several activities being implemented by Reclamation as part of the obligation to manage and operate the CVP. The following table identifies these activities and describes their relation to the renewal of the Shasta and Trinity River Divisions' water service contracts. Related studies and projects that have been conducted recently or are currently being completed are summarized in Table 1-2.

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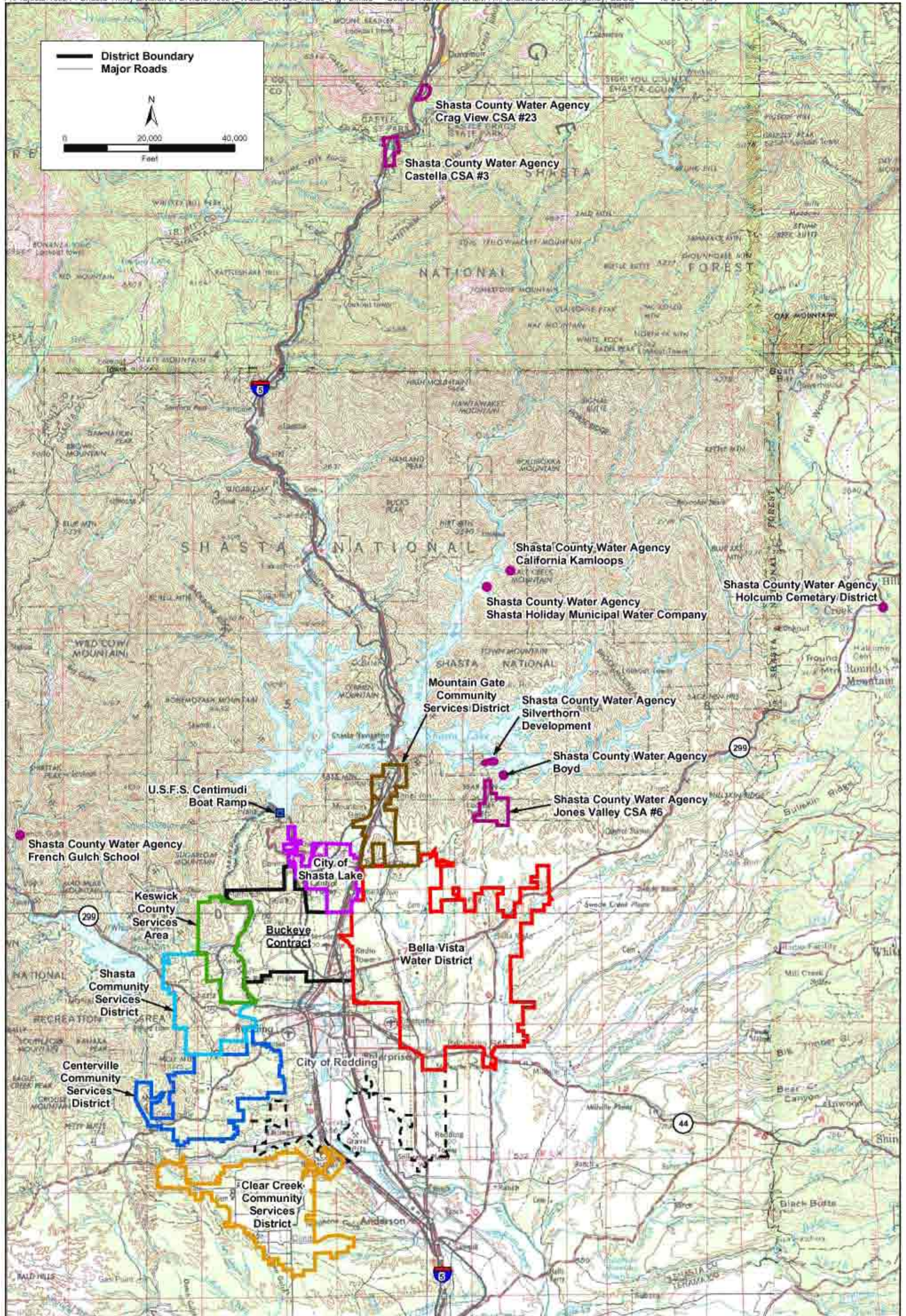


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Shasta and Trinity River Divisions Long-Term Contract Renewal

Figure 1-1
Regional Location & Project Vicinity

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Shasta and Trinity River Divisions Long-Term Contract Renewal

Figure 1-2
Generalized District Service Areas within the
Shasta and Trinity River Divisions

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**TABLE 1-2
RELATED ACTIVITIES**

Project or Study and Lead Agency	Summary
Long-Term Renewal of Other Existing CVP Water Service Contracts – Reclamation	Reclamation is in negotiation with other CVP water Contractors outside the Shasta and Trinity River Divisions for renewal of long-term contracts.
CALFED Bay-Delta Program (CALFED)	Established in May 1995, this consortium of Federal and state agencies is charged with the development of a long-term solution to Delta water concerns. CALFED completed an EIR/EIS (July 2000) as part of this process. Renewal of Long-Term CVP Contracts is assumed in the CALFED EIR/EIS.
Implementation of the CVPIA	The CVPIA mandates changes in management of the CVP, particularly for the protection, restoration, and enhancement of fish and wildlife. Ten major areas of change include: 800,000 acre-feet of water dedicated to fish and wildlife annually; tiered water pricing applicable to new and renewed contracts; water transfers provision, including sale of water to users outside the CVP service area; special efforts to restore anadromous fish population by 2002; restoration fund financed by water and power users for habitat restoration and enhancement and water and land acquisitions; no new water contracts until fish and wildlife goals achieved; no contract renewals until completion of a PEIS; terms of contracts reduced from 40 to 25 years with renewal at the discretion of the Secretary of the Interior; installation of a temperature control device at Shasta Dam; implementation of fish passage measures at Red Bluff Diversion Dam; firm water supplies for Central Valley wildlife refuges; and development of a plan to increase CVP yield.
Trinity River Restoration Program (TRRP)	Fish restoration in the Trinity River sub-basin is funded through a restoration program administered by Reclamation. The TRRP has two distinct program elements; 1) the Rehabilitation and Implementation Group, responsible for project development, engineering, and regulatory compliance; and 2) the Technical Modeling and Analysis Group, responsible for project development, monitoring, and integrating activities in an adaptive management framework. A number of Federal, state, and local participants are involved at both the policy and project level. Active participants include Reclamation, USFWS, NOAA Fisheries, U.S. Forest Service, Bureau of Land Management, California Resources Agency, Trinity County, and the Hoopa Valley and Yurok tribes.
Coordinated Operating Agreement (COA) and Operations Criteria and Plan (OCAP) Update – Reclamation and California Department of Water Resources	Provisions and requirements of the CVPIA, SWRCB Order 1641, the CALFED Bay-Delta Program, and other agency mandates require that the existing operational roles and responsibilities of the State Water Project and CVP be reviewed and updated to provide appropriate long-term operating criteria and procedures for the two primary water storage and delivery projects affecting waterways of the Central Valley.

CHAPTER 2

DESCRIPTIONS OF ALTERNATIVES

2.1 INTRODUCTION

This chapter summarizes the long-term water service contract negotiations process and descriptions of the alternatives considered in this EA.

2.2 LONG-TERM WATER SERVICE CONTRACT NEGOTIATIONS PROCESS

The CVPIA states that the Secretary shall, upon request, renew any existing long-term irrigation repayment or water service contract for the delivery of CVP water for a period of 25 years and may renew such contracts for successive periods of up to 25 years each. Consistent with the 1963 Act, M&I contracts shall be renewed for successive periods of up to 40 years each under terms and conditions that are mutually agreeable. The CVPIA also states that no renewals shall be authorized until appropriate environmental review, including the PEIS, has been completed. The PEIS provided a programmatic environmental analysis of the effects of the CVPIA and identified the need for site-specific environmental documents for the long-term contract renewal process.

The CVPIA also stated that contracts that expire prior to the completion of the PEIS may be renewed for interim periods. The interim renewal contracts reflect existing Reclamation law, including modifications due to the Reclamation Reform Act and applicable CVPIA requirements. The initial interim contract renewals were negotiated in 1994, with subsequent renewals for periods of two years or less to provide for continued water service. Many of the provisions included in the interim contracts are based on the provisions described under the Preferred Alternative in the PEIS. The CVPIA PEIS assumes that these provisions would be part of the long-term renewal contracts.

In 1998, the long-term contract renewal process was initiated. ~~After Reclamation reviewed the interim contract provisions that were consistent with Reclamation law and other requirements, comments on the Draft PEIS, and comments obtained during the interim contract renewal process,~~ Reclamation proposed a three-stage negotiating process for the long-term contracts. The first stage would consist of negotiating the provisions that would be included in all the long-term contracts. Those overall provisions of the long-term contract would be negotiated with representatives of all CVP water service Contractors. Following the acceptance of the CVP-wide provisions, Reclamation proposed that division-specific provisions and, finally, Contractor-specific provisions would be negotiated. ~~Reclamation also proposed that water service with representatives of all CVP water service contractors~~ contracts for all districts except for the Central San Joaquin Irrigation District, Stockton East Water District, and Colusa Drain Mutual Water Company would be renewed using this process. Contract renewals for these ~~three~~ districts would be delayed until the completion of water management studies for their primary sources of CVP water, the Stanislaus River and the Sacramento River.

Reclamation published the initial proposed contract in November 1999. There were numerous negotiations sessions throughout the next four years. The November 1999 contract would become the set of conditions for “one bookend” representing Alternative 2 of this environmental assessment. The CVP water service Contractors published a counter-proposal in April 2000 that would become the basis of negotiations (the other “bookend”) and, eventually, Alternative 1 of this environmental assessment. The primary differences between the two “bookends” are summarized in Table 2-1. [In May 2003, Reclamation prepared draft revised conditions as a counter offer to the April 2000 proposal. Appendix A summarizes the conditions of the May 2003 proposal.]

2.3 ISSUES CONSIDERED AS PART OF LONG-TERM CONTRACT RENEWALS

The long-term contract renewal process addressed several other issues in addition to the contract provisions. These issues include the needs analyses, changes in service areas, and water transfers.

2.3.1 NEEDS ANALYSIS

The water rights granted to the CVP by the State Water Resources Control Board (SWRCB) require the Federal government to determine that the water is being used in a beneficial manner. The Contractors have asserted that compliance with state laws and permits is the basis of the right to the continued beneficial use of water provided under the contracts. The needs analysis methodology was developed to confirm whether the CVP water is being used beneficially. The needs analysis was computed for each District within the various divisions or units of the CVP using a multiple-step approach. First, the existing water demand was calculated for each district. For agricultural Contractors, crop acreage, cropping patterns, crop water needs, effective precipitation, and conveyance losses were reviewed. For M&I Contractors, residential, commercial, industrial, institutional, recreational, and environmental uses; landscape coefficients; system losses; and landscape acreage were reviewed. Second, future changes in water demands based upon crops, municipal and industrial expansion, and changes in efficiencies were reviewed. Third, existing and future non-CVP water supplies were identified for each district, including groundwater and other surface water supplies. The initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of an aquifer. In addition, the actual water needs were calculated at each division or unit level to allow for intra-regional transfers on an annual basis.

Beneficial and efficient future water demands were identified for each district. The demands were compared to available non-CVP water supplies to determine the need for CVP water. If the need was less than contract amounts, the CVP water service contract amount could be reduced. Because the CVP was initially established as a supplemental water supply for areas without adequate supplies, the needs for most districts are at least equal to the CVP water service contract and frequently exceeded the previous contract amount. However, this environmental analysis does not include increased total contract amounts. Therefore, the CVP contract amount will be limited by the existing CVP contract quantity.

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
Explanatory Recitals	Assumes water rights held by CVP from SWRCB for use by water service contractors under CVP policies	Assumes CVP Water Rights as being held in trust for project beneficiaries that may become the owners of the perpetual rights.	Same as No Action Alternative
	Assumes that CVP is a significant part of the urban and agricultural water supply	Assumes CVP is a significant, essential, and irreplaceable part of the urban and agricultural water supply of users	Same as No Action Alternative
		Assumes increased use of water rights, need to meet water quality standards and fish protection measures, and other measures constrained use of CVP	Assumes that CVPIA impaired ability of CVP to deliver water
	Assumes the need for the 3408(j) study	Assumes implementation of yield increase projects per 3408(j) study	Same as No Action Alternative
	Assumes that loss of water supply reliability would have impact on socioeconomic conditions and change land use	Assumes that loss of water supply reliability would have significant adverse socioeconomic and environmental impacts in CVP service area	Same as No Action Alternative
Definitions			
"Charges"	Charges defined as payments required in addition to Rates	Assumes rewording of definition of Charges to exclude both Rates and Tiered Pricing Increments	Same as No Action Alternative
"Category 1 and Category 2"	Tiered Pricing as in PEIS	Not Included (Assumed to be the same as No Action Alternative)	Tiered Pricing for Categories 1 and 2
"Contract Total"	Contract Total described as Total Contract	Same as No Action Alternative	Described as basis for Category 1 to calculate Tiered Pricing

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
"Landholder"	Landholder described in existing Reclamation Law	Assumes rewording to specifically define Landholder with respect to ownership, leases, and operations	Assumes rewording to specifically define Landholder with respect to ownership and leases
"M&I Water"	Assumes rewording to provide water for irrigation of land in units less than or equal to 5 acres as M&I water unless Contracting Officer is satisfied use is for irrigation	M&I water described for irrigation of land in units less than or equal to 2 acres	Same as No Action Alternative
Terms of Contract – Right to Use Contract	Assumes that contracts may be renewed	States that contract shall be renewed	Same as No Action Alternative
	Assumes convertibility of contract to a 9(d) contract as in existing contracts	Includes conditions that are related to negotiations of the terms and costs associated with conversion to a 9(d) contract	Same as No Action Alternative
Water to Be Made Available and Delivered to the Contractor	Assumes water availability in any existing condition	Similar to No-Action Alternative	Actual water availability in year is unaffected by Categories 1 and 2.
	Assumes compliance with Biological Opinions and other environmental documents for contracting	Not included	Same as No Action Alternative
	Assumes that current operating policies strive to minimize impacts to CVP water users	Assumes that CVP operations will be conducted in a manner to minimize shortages and studies to increase yield shall be completed with necessary authorizations	Same as No Action Alternative
Time for Delivery of Water	Assumes methods for determining timing of deliveries as in existing contracts	Assumes minor changes related to timing of submittal of schedule	Same as No Action Alternative

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
Point of Diversion and Responsibility for Distribution of Water	Assumes methods for determining point of diversion as in existing contracts	Assumes minor changes related to reporting	Same as No Action Alternative
Measurement of Water Within District	Assumes measurement for each turnout or connection for facilities that are used to deliver CVP water as well as other water supplies	Assumes measurement at delivery points	Assumes measurement similar to No Action Alternative but applies to all water supplies
Rates and Method of Payment for Water	Assumes Tiered Pricing is for total water quantity. Assumes advanced payment of for rates for 2 months in advance.	Assumes Tiered Pricing is for total water quantity. Assumes advanced payment for rates for 1 month.	Assumes Tiered Pricing is for total water quantity. Assumes advance payment for rates for 6 months.
Non-interest Bearing Operation and Maintenance Deficits	Assumes language from existing contracts	Same as No Action Alternative	Same as No Action Alternative
Sales, Transfers, or Exchanges of Water	Assumes continuation of transfers, with the rate for transferred water being the higher of the sellers' or purchasers' CVP cost of service rate	Assumes continuation of transfers, with the rate for transferred water being the purchasers' CVP cost of service rate	Same as No Action Alternative
Application of Payments and Adjustments	Assumes payments will be applied as in existing contracts	Assumes minor changes associated with methods described for overpayment	Same as No Action Alternative
Temporary Reduction – Return Flows	Assumes that current operating policies strive to minimize impacts to CVP water users	Assumes minor changes associated with methods described for discontinuance or reduction of payment obligations	Same as No Action Alternative
Constraints on Availability of Project Water	Assumes that current operating policies strive to minimize impacts to CVP water users	Assumes Contractors do not consent to future Congressional enactments which may impact water supply reliability	Same as No Action Alternative
Unavoidable Groundwater Percolation	Assumes that some of applied CVP water will percolate to groundwater	Same as No Action Alternative	Same as No Action Alternative

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
Rules and Regulations	Assumes that CVP will operate in accordance with then existing rules	Assumes minor changes with right to non-concur with future enactments retained by Contractors	Same as No Action Alternative
Water and Air Pollution Control	Assumes that CVP will operate in accordance with then existing rules	Same as No Action Alternative	Same as No Action Alternative
Quality of Water	Assumes that CVP will operate in accordance with existing rules without obligation to operate towards water quality goals	Same as No Action Alternative	Same as No Action Alternative
Water Acquired by the Contractor Other than from the United States	Assumes that CVP will operate in accordance with existing rules	Assumes changes associated with payment following repayment of funds	Same as No Action Alternative
Opinions and Determinations	Recognizes that CVP will operate in accordance with existing rules	Assumes minor changes with respect to references to the right to seek relief	Same as No Action Alternative
Coordination and Cooperation	Not included	Assumes that coordination and cooperation between CVP operations and users should be implemented and CVP users should participate in CVP operational decisions	Not included
Charges for Delinquent Payments	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
Equal Opportunity	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
General Obligation	Assumes that CVP will operate in accordance with existing rules	Similar to No Action Alternative	Same as No Action Alternative
Compliance with Civil Rights Laws and Regulations	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
Privacy Act Compliance	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
Contractor to Pay Certain Miscellaneous Costs	Assumes that CVP will operate in accordance with existing rules	Similar to No Action Alternative	Same as No Action Alternative
Water Conservation	Assumes compliance with conservation programs established by Reclamation and the State	Assumes conditions similar to No Action Alternative with the ability to use State standards which may or may not be identical to Reclamation's requirements	Same as No Action Alternative
Existing or Acquired Water or Water Rights	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
Operation and Maintenance by Non-federal Entity	Assumes that CVP will operate in accordance with existing rules and no additional changes to operation responsibilities under this alternative	Assumes minor changes to language that would allow subsequent modification of operational responsibilities	Assumes minor changes to language that would allow subsequent modification of operational responsibilities
Contingent on Appropriation or Allotment of Funds	Assumes that CVP will operate in accordance with existing rules	Assumes minor changes to language	Same as No Action Alternative
Books, Records, and Reports	Assumes that CVP will operate in accordance with existing rules	Assumes changes for record keeping for both CVP operations and CVP users	Same as No Action Alternative
Assignment Limited	Assumes that CVP will operate in accordance with existing rules	Assumes changes to facilitate assignments	Same as No Action Alternative
Severability	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
Resolution of Disputes	Not included	Assumes a Dispute Resolution Process	Not included
Officials Not to Benefit	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative

**TABLE 2-1
COMPARISON OF CONTRACT PROVISIONS CONSIDERED IN ALTERNATIVES**

Provision	No Action Alternative	Alternative 1	Alternative 2
	Based on PEIS and Interim Contracts	Based on April 2000 Proposal	Based on November 1999 Proposal
Changes in Contractor's Service Area	Assumes no change in CVP water service areas absent Contracting Officer consent	Assumes changes to limit rationale used for non-consent and sets time limit for assumed consent	Same as No Action Alternative
Notices	Assumes that CVP will operate in accordance with existing rules	Same as No Action Alternative	Same as No Action Alternative
Confirmation of Contract	Assumes Court confirmation of contract	Not included. Assumption is Court confirmation not required	Same as No Action Alternative

2.3.2 CHANGES IN WATER SERVICE AREAS

This environmental analysis does not consider future changes in water service area boundaries for use of CVP water. Any future changes to water service area boundaries for use of CVP water will be evaluated in separate technical and environmental analyses.

2.3.3 WATER TRANSFERS

Several different types of transfers are considered for long-term contract renewals. Intra-CVP contract transfers have occurred regularly throughout the CVP and are frequently limited to scheduling changes between adjoining districts. Reclamation has historically issued and will continue to address these types of transfers under separate environmental analyses.

It is recognized that water transfers will continue to occur and that the CVP long-term contracts will provide the mechanism. Because CVPIA has allowed these transfers, as evaluated in the PEIS for the Preferred Alternative, the No Action Alternative includes water transfer provisions. These provisions for transfers are also included in both Alternatives 1 and 2. However, it is difficult to identify all of the water transfer programs that could occur with CVP water in the next 25 years. Reclamation would continue with separate environmental documents for proposed transfers in establishing criteria and protocols to allow rapid technical and environmental review of future proposed transfers.

2.4 DEVELOPMENT OF ALTERNATIVES

Three alternatives were identified for analysis of the renewal of long-term contracts between Reclamation and Contractors in the Shasta and Trinity River Divisions. Another alternative, the final contractual language, was not specifically analyzed but any impacts attributable to it were within the analysis performed.

The alternatives present a range of water service agreement provisions that could be implemented for long-term contract renewals. The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. In November 1999, Reclamation published a proposed long-term water service contract. In April 2000, the CVP Contractors presented an alternative long-term water service contract. Reclamation and the CVP Contractors continued to negotiate the CVP-wide terms and conditions with these proposals serving as “bookends,” the final negotiated contract thus being between the “book ends”. This EA also considers these proposals with the No Action Alternative as bookends to be considered for the environmental documentation to evaluate the impacts and benefits of the renewing long-term water service contracts. Chapter 4 describes environmental consequences in terms of incremental effects that would accrue due to implementing Alternative 1 or Alternative 2 as compared to the No- Action Alternative.

2.4.1 NO ACTION ALTERNATIVE

The No Action Alternative assumes renewal of long-term CVP water service contracts for a period of 25 years in accordance with implementation of CVPIA as described in the PEIS Preferred Alternative. The PEIS Preferred Action assumed that most contract provisions would be similar to many of the provisions in the 1997 CVP Interim Renewal Contracts, which included contract terms and conditions consistent

with applicable CVPIA requirements. In addition, the No Action Alternative assumes tiered pricing provisions and environmental commitments as described in the PEIS Preferred Alternative. The provisions of the No Action Alternative are summarized in Table 2-1. These provisions were described in the Final PEIS.

Several CVPIA provisions are summarized in the following descriptions for the No Action Alternative because these provisions differ from Alternatives 1 and/or 2. The provisions particularly relevant to the No Action Alternative include tiered water pricing, definition of M&I water, water measurement, and water conservation.

Tiered Water Pricing

Tiered water pricing in the No Action Alternative is based upon use of an “80/10/10 Tiered Water Pricing from Contract Rate to Full Cost” including appropriate Ability-to-Pay limitations. Under this approach, the first 80 percent of the maximum contract total would be priced at the applicable Contract Rate. The next 10 percent of the contract total would be priced at a rate equal to the average of the Contract Rate and Full Cost Rate. The final 10 percent of the contract total would be priced at Full Cost Rate. The terms “Contract Rate” and “Full Cost Rate” are defined by the CVP rate setting policies, and P.L. 99-546 and the Reclamation Reform Act (RRA), respectively. The Contract Rate for M&I water includes the Contractor’s allocated share of CVP main project operations and maintenance (O&M), O&M deficit, if any, and capital cost. The Contract Rate for irrigation water does not include interest on capital. The Contract Rate for M&I water includes interest on capital computed at the CVP M&I interest rate. The Full Cost rate for irrigation and M&I water includes interest at the RRA interest rate.

In addition to the CVP water rate, Contractors are required to pay a Restoration ~~payment charge~~ on all deliveries of CVP water. Reclamation law and policy provide full or partial relief to irrigation Contractors on Restoration ~~Payments charges~~ and the capital rate component of the water rate. The relief could be up to 100 percent of the capital cost repayment and Restoration charge and is based upon local farm budgets. Ability-to-pay relief, relative to the irrigation water rate, is fully applicable only to the first 80 percent of the contract total. Ability-to-pay relief is not applicable to the third tier water rate. The second tier may reflect partial ability-to-pay relief, as it is equal to the average of the first and third tiers. ~~The relief could be up to 100 percent of the capital cost repayment and is based upon local farm budgets.~~ The Ability-to-Pay law and policy do not apply to CVP operation and maintenance costs, M&I water rates, CVP distribution facilities, or non-CVP water costs.

The ~~prices rates for~~ of CVP water used in the No Action Alternative are based upon 1994 irrigation and M&I CVP water rates.

Definition of Municipal and Industrial Users

The definition of municipal and industrial (M&I) users was established in portions of a 1982 Reclamation policy memorandum. In many instances, municipal users are easily definable. However, with respect to small tracts of land, the 1982 memorandum identified agricultural water as agricultural water service to tracts that can support \$5,000 gross income for a commercial farm operation. The memorandum (United States Department of the Interior, 2000) indicates that this criterion can generally be met by parcels larger

than 2 acres. Based on this analysis, the CVP has generally applied a definition of 5 acres or less for M&I uses in the CVP for many years. The CVP Contractors can request a modification for a demonstrated need for agricultural use on parcels ~~between 2 and~~ less than 5 acres from the Contracting Officer.

Water Measurement

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

Water Conservation

The water conservation assumptions in the No Action Alternative include water conservation actions for municipal and on-farm uses assumed in the Department of Water Resources (DWR) Bulletin 160-93, and conservation plans completed under the 1982 RRA consistent with the criteria and requirements of the CVPIA. Such criteria address cost-effective Best Management Practices that are economical and appropriate, including measurement devices, pricing structures, demand management, public information, and financial incentives.

2.4.2 ALTERNATIVE 1

Alternative 1 is based upon the proposal presented by CVP water service Contractors to Reclamation in April 2000. However, there were several issues included in the April 2000 proposal that could not be included in Alternative 1 because they are not consistent with existing Federal or state requirements or would require a separate Federal action, as described below.

- The proposed alternative 1 includes Terms and Conditions to provide a highly reliable water supply, and provisions to improve the water supply capabilities of the CVP facilities and operations to meet this goal. *These issues were not included in Alternative 1 because these issues would require additional Federal actions with separate environmental documentation and also limit the Secretary's obligation to achieve a reasonable balance among competing demands as required by the CVPIA. Currently, Reclamation is completing the least cost plan to restore project yield in accordance with Section 3408(j) of CVPIA and under the CALFED program.*
- The proposed alternative 1 includes language to require renewal of contracts after 25 years upon request of the Contractor. *The study period for this EA is 25 years, which coincides with the contract period applicable to irrigation contracts and required by CVPIA. Renewal after 25 years would be a new Federal action and would require new environmental documentation.*

- The proposed alternative 1 does not include provisions for compliance with biological opinions. *Biological consultations are required by the Consultation and Coordination requirements established by Executive Order for all Reclamation activities. These are binding on Reclamation and provisions are needed to address this requirement.*
- The proposed alternative 1 included provisions for water transfers. *It is recognized that water transfers will continue and that the CVP long-term contracts will provide the mechanisms for the transfers. However, it would be difficult to identify all of the water transfer programs that could occur with CVP water in the next 25 years. Reclamation would ~~continue with~~ require separate environmental documents for transfers, and will establish criteria for rapid technical and environmental review of proposed transfers.*
- The proposed alternative 1 includes provisions for transfer of operations and maintenance requirements. *It is recognized that transfers of operation and maintenance to the group of Contractors will continue and that the CVP long-term contracts will provide the mechanisms for such transfers. However, it would be difficult to identify all of the operation and maintenance transfer programs that could occur with CVP water in the next 25 years. Reclamation would require separate environmental documents for such transfers.*
- The proposed alternative 1 includes provisions for resolution of disputes. *Assumptions for resolution of disputes were not included in Alternative 1 and at this time would not appear to affect environmental conditions.*
- The proposed alternative 1 includes provisions for expansion of the CVP service areas by the existing CVP water Contractors. *The study area for the long-term contract renewal process is defined by the existing service area boundaries. Expansion of the service area boundaries would be a new Federal action and would require separate environmental documentation.*

Alternative 1 includes several provisions that were different than the assumptions for No Action Alternative and those provisions are included in Alternative 1, as summarized in Table 2-1. The April 2000 proposal also included several provisions that involve specific language changes that would not significantly modify CVP operations in a manner that would affect the environment as compared to the No Action Alternative but could affect specific operations of a Contractor, as described in Table 2-1.

It should be noted that the tiered pricing requirements (including unit prices for CVP water) and definition of M&I users in Alternative 1 would be the same as in the No Action Alternative.

2.4.3 ALTERNATIVE 2

Alternative 2 is based upon the proposal presented by Reclamation to CVP water service Contractors in November 1999. However, there were several provisions included in the November 1999 proposal that are not included in Alternative 2. These provisions would constitute a separate Federal action, as described below.

- The November 1999 proposal included provisions for the Contractor to request approval from Reclamation for proposed water transfers. *Water transfers were not included in Alternative 2 because such actions cannot now be definitely described; they essentially constitute a separate Federal action and require separate environmental documentation.*
- The November 1999 proposal included provisions for transfer of operations and maintenance to third parties. *Operations and maintenance transfers were not included in Alternative 2 because these actions would be a separate Federal action and require separate environmental documentation.*

The November 1999 proposal included several provisions that were different than the assumptions for No Action Alternative and that are included in Alternative 2, as summarized below and in Table 2-1. The primary differences are related to tiered pricing and the definition of M&I users.

Tiered Water Pricing

Tiered water pricing under Alternative 2 is based upon a definition of “Category 1” and “Category 2” water supplies. “Category 1” is defined as the quantity of CVP water that is reasonably likely to be available for delivery to a Contractor and is calculated on an annual basis as the average quantity of delivered water during the most recent 5-year period. For the purposes of this Alternative, the “Category 1” water supply is defined as the “contract total” of CVP water. Category 2 is defined as that additional quantity of CVP water in excess of Category 1 water that may be delivered to a Contractor in some years. Under Alternative 2, the first 80 percent of the Category 1 volume would be priced at the applicable Contract Rate for the CVP. The next 10 percent of the Category 1 volume would be priced at a rate equal to the average between the Contract Rate and Full Cost Rate, as defined by Reclamation law and policy. The final 10 percent of the Category 1 volume would be priced at the Full Cost Rate as required by the CVPIA. All Category 2 water, when available, would be priced at Full Cost Rate. It should be noted that Category 1 and Category 2 volumes will change every year based upon the average deliveries for the “most recent 5 years,” with limited exceptions based upon the findings of the water needs assessment. Alternative 2 assumes the sum of Category 1 and Category 2 water is equal to the maximum quantity included in the Contractors’ existing water service contract. The quantity is the same as the No Action Alternative and Alternative 1. The terms “Contract Rate” and “Full Cost Rate” are discussed under Tiered Pricing for the No Action Alternative. The same Ability-to-Pay adjustments would be applicable to Restoration Payments and tiered water rates, as described in the No Action Alternative.

The prices of CVP water used in Alternative 2 are based upon irrigation and municipal/industrial CVP water rates presented in the November 17, 1999, Financial Workshop Handouts 1 and 2.

Definition of Municipal and Industrial Users

The definition of M&I water includes water for all tracts less than or equal to 5 acres, unless the Contracting Officer is satisfied that the use of such water meets the definition of “Irrigation Water.”

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED

2.5.1 NONRENEWAL OF LONG-TERM CONTRACTS

Nonrenewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA. This alternative was considered but eliminated from analysis in this EA because Reclamation has no discretion to not renew the contracts.

2.5.2 REDUCTION IN CONTRACT AMOUNTS

A reduction in contract amounts was considered in certain cases but rejected from analysis. The reason for this is two-fold. Water needs analyses have been completed for all contracts, and, in almost all cases the needs exceed or equal the current total contract amount. Secondly, in order to implement good water management, the Contractors need to be able to store or immediately use water available in wetter years when more water is available. By quantifying contract amounts in terms of the needs analyses and the CVP delivery capability, the Contractors can make their own economic decisions. Allowing the Contractors to retain the full water quantity gives the Contractors assurance that the water will be available to them for storage investments. In addition, the CVPIA, in and of itself, achieves a balance in part through its dedication of significant amounts of CVP water to environmental purposes, and actions to acquire water for these purposes.

2.6 SELECTION OF THE PROPOSED ACTION/PREFERRED ALTERNATIVE

~~It is anticipated that the~~The final contract language represents a negotiated position between Alternatives 1 and 2. Therefore, ~~it is anticipated that the~~ any impacts will be ~~are~~ either equal to or less than those identified for Alternative 1, Alternative 2, or the No Action Alternative. Reclamation's proposed action is to renew to the long-term contracts representing the final negotiated position. This form of contract is provided as Appendix A.

2.7 SUMMARY OF THE IMPACT ASSESSMENT

Table 2-2 is a Summary of Impacts by Alternatives. The alternatives considered in this EA were analyzed to determine the potential for beneficial and adverse impacts associated with their implementation when compared to the continuation of the No Action Alternative conditions. (Recall that the No Action Alternative—which is the same as the CVPIA PEIS Preferred Action—assumes that most contract provisions would be similar to the provisions in the 1997 CVP Interim Renewal Contracts, which included contract terms and conditions consistent with applicable CVPIA requirements.)

**TABLE 2-2
SUMMARY OF IMPACTS OF ALTERNATIVES**

Resource	Description of Impact
NO ACTION ALTERNATIVE	
SOCIOECONOMICS (SECTION 4.3)	
Demographics	By 2030, Shasta County population would increase by more than 50 percent from 1999 levels. County population is expected to change from 163,256 (2000) to 267,749 (2030), an increase of 64%.
M & I Water Costs, Land Use and Economics	Based on 1994 dollars, Contractors would pay approximately \$1.1 million in contract year 25 (2029) for untreated CVP M&I water during average year hydrologic conditions following five dry years.
Agricultural Water Costs, Land Use and Economics	<p>Unlike the assessment of M&I water cost impacts, the agricultural water cost assessment is based on 1999 rates since the PEIS agricultural economic analysis was updated to 1999. Agricultural water for the Divisions is used by BVWD and CCCWSD. BVWD irrigators are projected to use over two times more CVP water on 25% more land as CCCWSD irrigators. This disparity is explained by the fact that a greater portion of BVWD's cropping pattern is projected to be in pasture, a water intensive crop.</p> <p>For BVWD, during average conditions, the gross value of production in contract year 25 (2029) would be \$1.95 million. Crop water use would be 13,500 acre-feet per year, and 5,960 acres would be irrigated based on 1999 dollars.</p> <p>For CCCWSD, during average conditions, the gross value of production in contract year 25 (2029) would be \$4.58 million. Crop water use would be 5,800 acre-feet per year, and 4,690 acres would be irrigated based on 1999 dollars.</p>
Regional Economy	For the contract year 25 (2029) in Shasta County, the estimated output for standard industrial sectors would be \$4,742 million. Full-time equivalent employment would be 71,579 jobs, and total income would be \$2,695 million.
LAND USE (SECTION 4.4)	Indirect effects could occur to agricultural uses due to rewording that would provide M&I water service to irrigated land less than or equal to 5 acres unless the Contracting Officer is satisfied the use is for irrigation. For BVWD, irrigated acreage would increase to 5,960 acres during average hydrologic year conditions and to 5,890 acres for dry hydrologic conditions. For CCCWSD, the irrigated acreage would increase to 4,690 acres and 4,640 acres for the average and dry hydrologic conditions, respectively.
BIOLOGICAL RESOURCES (SECTION 4.5)	Indirect effects to biological resources could occur as a result of changes to land use under the No Action Alternative.
ENVIRONMENTAL JUSTICE (SECTION 4.6)	No disproportionate effect on minority populations or low-income populations is anticipated.
INDIAN TRUST ASSETS (SECTION 4.7)	No Indian Trust Assets are known to occur within water service areas. Therefore, no Indian Trust assets would be adversely affected by the No Action Alternative
CULTURAL RESOURCES (SECTION 4.8)	Indirect effects to cultural resources could occur due to planned growth and development, or changes in land use from agricultural uses to suburban/urban uses, or suburban uses to agricultural uses. Changes in land use could affect known and undiscovered cultural resources. However, both federal and state jurisdictions provide programs to protect cultural resources and are responsible for implementing these programs.

**TABLE 2-2
SUMMARY OF IMPACTS OF ALTERNATIVES**

Resource	Description of Impact
ALTERNATIVE 1	
SOCIOECONOMICS (SECTION 4.3)	
Demographics	Same as the No Action Alternative
M & I Water Costs, Land Use and Economics	Same as the No Action Alternative
Agricultural Water Costs, Land Use and Economics	Alternative 1 is expected to have effects on agricultural water costs and associated land and water use, gross value of production, and farm net revenues for the affected water districts similar to the No Action Alternative. Therefore, there are no environmental impacts from this alternative.
Regional Economy	Same as the No Action Alternative
LAND USE (SECTION 4.4)	Same as the No Action Alternative
BIOLOGICAL RESOURCES (SECTION 4.5)	Similar direct and indirect effects as the No Action Alternative.
ENVIRONMENTAL JUSTICE (SECTION 4.6)	No incremental adverse effects
INDIAN TRUST ASSETS (SECTION 4.7)	No adverse impacts. Same as the No Action Alternative.
CULTURAL RESOURCES (SECTION 4.8)	No incremental environmental effects
ALTERNATIVE 2	
SOCIOECONOMICS (SECTION 4.3)	
Demographics	Same as the No Action Alternative.
M & I Water Costs, Land Use and Economics	The incremental effect would be that the Contractors would pay approximately \$1.8 million more than under the No Action Alternative in contract year 25 (2029) for untreated CVP M&I water during the average year hydrologic conditions.
Agricultural Water Costs, Land Use and Economics	Alternative 2 would cause BVWD agricultural water cost-of-service rate to increase by about 45% from the No-Action level. Implementation of Alternative 2 could cause as many as 800 acres of irrigated pastureland to be fallowed in the BWVD during projected year 2029 during average hydrologic conditions (and even more, 1160

**TABLE 2-2
SUMMARY OF IMPACTS OF ALTERNATIVES**

Resource	Description of Impact
	<p>acres, under dry hydrologic conditions). The analyses indicate that in contract year 25 (2029) under average hydrologic conditions, BVWD farmers may reduce their use of CVP agricultural water by as much as 7,550 acre-feet, or more than half their 13,500 acre-feet of projected use under the No-Action Alternative. The fallowing of land and reduction of applied water on lands that remain under irrigation due to Alternative 2 could reduce the annual gross value of agricultural production within the BVWD by approximately 6% (or \$120,000 in 1999 dollars) and the net income realized by farmers by as much as \$130,000 in 1999 dollars under average hydrologic conditions. In a dry year, the decline in gross production value and net revenue impacts could be \$180,000 and \$260,000, respectively (in 1999 dollars).</p> <p>Under Alternative 2, CCCSD agricultural cost-of-service water rates would increase by about 20% and would be much lower than the impact on its CVP M&I cost-of-service water rates previously discussed. Under Alternative 2, as many as 510 acres of CCCSD projected contract year 25 (2029) irrigated pastureland would be fallowed during a year of average hydrologic conditions (and 740 acres even under dry hydrologic conditions). In the year 2029, assuming average hydrologic conditions, CCCSD farmers may reduce their use of CVP agricultural water by as much as 3,250 acre-feet. The fallowing of land and reduction of applied water on lands that remain under irrigation due to Alternative 2 could reduce the annual gross value of agricultural production within CCCSD by approximately 2% (or \$80,000 in 1999 dollars). In a dry year, the decline in gross production value and net revenue impacts could be \$120,000 and \$140,000, respectively (in 1999 dollars).</p>
Regional Economics	The County's industrial output could decrease by as much as \$3.3 million (0.07%) when compared to the No Action Alternative. The County economy could decline from the No Action Alternative by as many as 46 jobs (less than 1%), and the regional income by place of work could decrease by almost \$1.9 million dollars (0.07%) from the No Action Alternative.
LAND USE (SECTION 4.4)	Indirect effects would occur. The incremental effect for BVWD would be the increased fallowing of about 800 acres in contract year 25 (2029) under average conditions and 1,160 acres under dry conditions. The incremental effect for CCCSD would be the increased fallowing of about 510 acres in contract year 25 (2029) under average conditions and 740 acres under dry conditions.
BIOLOGICAL RESOURCES (SECTION 4.5)	Variable indirect effects would occur that could be beneficial or adverse, depending on the specific parcels, habitats, and species affected.
ENVIRONMENTAL JUSTICE (SECTION 4.6)	No incremental adverse effects.
INDIAN TRUST ASSETS (SECTION 4.7)	No incremental adverse effects. Same as the No Action Alternative.
CULTURAL RESOURCES (SECTION 4.8)	No incremental environmental effects.
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES (SECTION 4.9)	There is no commitment of nonrenewable resources, and the proposed action does not commit future generations to permanent use of natural resources.
RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG TERM PRODUCTIVITY (SECTION 4.10)	Long-term productivity would be enhanced through the water supply that sustains agricultural economics, social benefits, and the long-term productivity of urban and rural populations by providing CVP water.

CHAPTER 3

SUMMARY OF PREVIOUS ENVIRONMENTAL DOCUMENTATION

3.1 INTRODUCTION

The purpose of this chapter is to summarize the findings of documents completed pursuant to NEPA and the California Environmental Quality Act (CEQA) that address environmental issues related to providing CVP water to the Shasta and Trinity River Divisions and using the CVP water within the Shasta and Trinity River Divisions. These documents include the CVPIA PEIS, the associated Draft Biological Opinion, and the Environmental Impact Report (EIR) for the Shasta County General Plan.

Following completion of the PEIS, Reclamation prepared additional environmental documentation for renewal of long-term water service and repayment contracts, including this EA to address the site-specific impacts relating to contract renewals within the Shasta and Trinity River Divisions.

It should be recognized that under each of the descriptions presented in this chapter, references to “No Action Alternative” and other alternatives are specific to the referenced documents, not to the alternatives described in this EA.

3.2 CVPIA PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

On October 30, 1992, the President signed into law the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575) that included Title XXXIV, the CVPIA. The CVPIA amended the previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses, and fish and wildlife enhancement as a project purpose equal to power generation. Through the CVPIA, The U.S. Department of the Interior is developing policies and programs to improve environmental conditions that were affected by the operations, management, and physical facilities of the CVP. The CVPIA also includes tools to facilitate larger efforts in California to improve environmental conditions in the Central Valley and the San Francisco Bay-Delta system. The PEIS addressed the potential impacts and benefits of implementing provisions of the CVPIA. The PEIS was prepared by Reclamation and the USFWS.

The analysis in the PEIS was intended to disclose the probable region-wide and cumulative effects of implementing the CVPIA and to provide a basis for selecting a decision among the alternatives. The PEIS was developed to allow subsequent environmental documents to incorporate by reference the analysis in the PEIS and limit the need to re-evaluate the region-wide and cumulative impacts of CVPIA. In some cases, worst-case assumptions were used to maximize the utility of the analysis for tiering within the scope of the impacts analyzed in the PEIS.

As the project-specific actions are considered, the lead agencies must determine if the specific impacts were adequately analyzed in the PEIS. If the actions under consideration were previously evaluated and the impacts of such actions would not be greater than those analyzed in the PEIS or would not require additional mitigation measures, the actions could be considered part of the overall program approved in

the ROD for the CVPIA PEIS. In such a case, an administrative decision could be made that no further environmental documentation would be required. If a tiered document is appropriate, the tiered document may be an EIS or an EA. The tiered documents can use the PEIS by reference to avoid duplication and focus on new alternatives or more detailed site-specific effects. Therefore, only changes from the alternatives considered in the PEIS, and impacts not previously addressed, would be addressed in detail in the tiered documents.

3.3 LOCALIZED IMPACTS OF PEIS ON PREFERRED ALTERNATIVE

The primary impact to CVP water service contractors, as described in the PEIS, is not due to the contract provisions, but rather to the implementation of the CVPIA. The re-allocation of CVP water to fish and wildlife purposes under CVPIA reduced average annual CVP water deliveries to water service contractors from 2,270,000 acre-feet/year under the PEIS No Action Alternative to 1,933,000 acre-feet/year under all of the PEIS alternatives, including the Preferred Alternative. The reduction occurred differently for various classifications of users, as summarized below.

- Average annual CVP water deliveries for agricultural water service contractors located in the Shasta and Trinity River Divisions decreased 12 percent from pre-CVPIA Affected Environment conditions.
- Average annual CVP water deliveries for municipal and industrial water service contractors located in the Shasta and Trinity River Divisions decreased 4 percent from pre-CVPIA Affected Environment conditions.

3.4 SHASTA COUNTY WATER RESOURCES MASTER PLAN PHASE I REPORT – CURRENT AND FUTURE WATER NEEDS

The Shasta County Water Resources Master Plan (October 1997) was prepared for the Redding Area Water Council and other Shasta County water users. As an initial step in regional water supply planning to meet future needs in the Redding Basin, a diverse assemblage of entities, including water purveyors, industries, and private interests, formed a group to identify current and long-term water supply needs throughout Shasta County. Through this effort, the study sponsors developed a program for regional planning to meet the current and future needs of water users within and outside the Redding Basin. The Phase 1 study provides the basic factual information upon which subsequent work can be premised. Phase 2 will include preparing a Groundwater Management Plan (Assembly Bill [AB] 3030 Plan), a groundwater model, and an Integrated Resource Plan. Phase 3 will involve developing implementation and financial plans for the recommended alternative. The implementation plan will also include compliance under CEQA.

The document provides a description of the hydrographic basin, specific background information for each of the water purveyors and service areas, land use, water supplies and needs, and an annual water budget. This information was used extensively to describe and quantify conditions within the Affected Environment section of this EA.

3.5 OTHER PLANNING DOCUMENTS

Under state planning law, each city or county must adopt a comprehensive, long-term general plan for future planning and development. A General Plan is not a detailed, parcel-specific, policy statement. Instead, it establishes a generalized pattern of future land use which provides the basis for more detailed, site-specific plans.

Existing general plans and their supporting documents were used in the preparation of this EA, providing background information for resource-specific discussions of the Affected Environment. The City of Redding (Draft March 2000) and the City of Shasta Lake (March 1999) have each adopted a General Plan. The two cities represent the minority of the Shasta and Trinity River Divisions' service area. The majority of the service area falls within unincorporated portions of Shasta County. In these areas, land use planning is subject to guidelines identified in the Shasta County General Plan (October 1998). Other documents used in the preparation of this EA include Water Conservation Plans for BVWD (January 1995), CCCSD (November 1994), City of Redding (undated, assume 1994), and City of Shasta Lake (March 1994).

3.6 FOCUS OF THE ENVIRONMENTAL ASSESSMENT

The scope of the analysis in this EA is limited to existing available sources, including the Final CVPIA Programmatic EIS (1999). This EA specifically evaluates the incremental effects of Alternative 1 and Alternative 2 on socioeconomic resources. Socioeconomic resources are evaluated to describe potential incremental impacts resulting from the proposed revised pricing structure that is part of the proposed action. Potential secondary effects to other resources due to direct effects on socioeconomic resources are described in the EA sections on land use, biological resources, trust assets, environmental justice, and cultural resources.

CHAPTER 4

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND ENVIRONMENTAL COMMITMENTS

4.1 INTRODUCTION

This section describes the affected environment and the environmental consequences, including cumulative effects, associated with renewing the long-term water service contracts for the Shasta and Trinity River Divisions under Alternatives 1 and 2 compared to the No Action Alternative.

This document organizes required information by environmental resources. Each resource section describes the affected environment and the environmental consequences associated with renewing the long-term water service contracts under Alternatives 1 and 2 as compared to renewing the long-term water service contracts under the No Action Alternative.

CONTRACT SERVICE AREA DESCRIPTION

The Shasta and Trinity River Divisions consist of the BVWD, CCCSD, City of Redding (Buckeye Area), City of Shasta Lake, SCSD, SCWA, CCSD, and three other smaller contractor service areas, KCSA, MGCSD, and USFS Centimudi Boat Ramp. Table 4.1-1 describes features of each long-term water service contractor within the Shasta and Trinity River Divisions, and Figure 1-2 shows the approximate service boundaries of the long term water service contractors.

The Shasta and Trinity River Divisions are located entirely within Shasta County and fall primarily within the Redding Basin, Drainage Area Units (DAUs) 141 and 143, with minor areas in outlying DAUs 136 and 145. Water is supplied for irrigation, domestic, industrial, commercial, or recreational uses, or a combination of these uses. The location, history, service area, and water supply sources of each major long-term water service contractor are described in this section. As shown on Table 4.1-1, the major long-term water service contractors are BVWD and CCCSD. BVWD and CCCSD account for 72 percent of all CVP water delivered to long-term water service contractors in the Shasta and Trinity River Divisions. The discussions in the following sections address the major water service contractors in the Shasta and Trinity River Divisions.

RESOURCES CONSIDERED

The resources and issues analyzed in this EIS were identified through a review of NEPA guidance documents, and through the scoping process. The resources and issues described in this chapter are as follows.

- Water Supplies and Facilities Operations
- Socioeconomics
- Land Use

- Biological Resources
- Environmental Justice
- Indian Trust Assets
- Cultural Resources

This EA does not analyze resources for which it would be reasonable to assume that substantial or significant impacts could not occur. Specifically, potential effects to water quality, recreation, air quality, soils, visual resources, transportation, noise, hazards and hazardous material, public services, non-water utilities, and service systems and secondary growth impacts are not analyzed because they were not identified as significant issues during scoping and it would not be reasonable to assume that renewing the long-term water service contracts could result in substantial impact to these resources or services.

**TABLE 4.1-1
FEATURES OF SHASTA AND TRINITY RIVER DIVISIONS LONG-TERM SERVICE CONTRACTORS (1999)**

Contractor Name	Shasta or Trinity River Division	Contract Number	Maximum Water Quantity of CVP Long Term Contract Water (Acre-Feet)	Note	% of the Division's Maximum Water Quantity	Reclamation M&I Rate Assigned	Reclamation Ag Rate Assigned	Service Boundary Area (Acres)	Total Connections (3)		Pre-CVPIA Expiration
									M&I	Ag	
Bella Vista Water District	T	851A1R39	24,000		42.33%	x	x	<u>3,39533.932</u>	4538	615	2/29/2000
Centerville Community Services District	T	14062003367AX	2,900	(1)	5.11%	x	o	nav	1155	0	12/31/2004
City of Redding	S	5272A	6,140	(2)	10.83%	x	o				
Spring Creek Conduit (Buckeye)	S	5272A	Included			-	-	17,220	4,179	0	12/31/2009
Sacramento River (Buckeye)	S	5272A	Included			-	-	Included	-	0	12/31/2009
Toyon Pipeline (Buckeye)	S	5272A	Included			-	-	640	58	0	12/31/2009
City of Shasta Lake	S	W11341R410	2750 4,400		7.76%	x	o	7,785	3,773	0	2/29/2000
Shasta Dam Area PUD		nav	Included			-	-	-	-	-	
Summit City PUD		nav	Included			-	-	-	-	-	
Clear Creek Community Services District	T	489A1R39	15,300		26.98%	x	x	14,314	1,707	784	2/29/2000
Shasta Community Services District	T	862A	1,000		1.76%	x	o	6,400	717	0	12/31/2003
Shasta County Water Agency	S	3367A	2,100	(3)	3.70%	x	o	nav	nav	0	12/31/2004
Others			860								
Keswick County Service Area	T	1307A	500		0.88%	x	o	5,500	191	0	12/31/2009
Mountain Gate Community Services District	S	6998	350		0.62%	x	o	4,160	650	0	12/31/2003
USFS (Centimudi Boat Ramp)	S	3464A	10	(4)	0.02%	x	o	nav	nav	0	Indefinite
Total			55,050		99.99%			56,019			

NOTES

- (1) New interim contract in 2001 for 2,900 acre-feet.
 - (2) City has 6,140 acre-feet under CVP Buckeye Contract.
 - (3) SCWA principally subcontracts CVP water to others; agricultural water not used since 1983.
 - (4) Information provided by contractor on September 20, 2000
- nav = information not available

4.2 WATER SUPPLIES AND FACILITIES OPERATIONS

4.2.1 DESCRIPTION OF EXISTING SHASTA AND TRINITY RIVER DIVISIONS AND FACILITIES

Bella Vista Water District

The BVWD is located generally east of the City of Redding and south of Shasta Lake. BVWD is bounded on the south generally by State Highway 44 and extends east to slightly beyond Little Cow Creek. This area also includes an overlapping eastern part of the City of Redding and the rural communities of Bella Vista and Palo Cedro. The district currently has 4,538 residential connections and 615 agricultural connections.

BVWD is a publicly owned water agency formed in ~~1964~~1957 under California Water Code Division 13, Sections 34000 through 38501. The district was formed to serve agricultural irrigation demands, which still represent 70 to 80 percent of the district's water demand. However, most of the service connections are now either domestic or rural residential.

Urban uses predominate within the southeast corner of the district where sewage disposal facilities are available. Residential uses, with lot sizes between 1 and 5 acres, are dispersed across the rest of the district. Agricultural uses are almost exclusively confined to the fertile soil along Stillwater Creek and Cow Creek. Pasture represents the bulk of the agricultural uses, but there is a broad array of other crops as well. The most significant industrial use is a large catfish farm.

BVWD's primary water source is the Sacramento River. Diversion of the ~~appropriated~~ water is authorized from the Cow Creek Unit of the Trinity River ~~Project~~ Division, which is part of the CVP. This source allows for up to 24,000 acre-feet per year from BVWD's original contract and 578.7 acre-feet per year of CVP water purchased through the Shasta County Water Agency. (That 578.7 acre-feet is being assigned to BVWD by the SCWA). Both of these allotments are subject to reduction during dry years. In the very severe drought years of 1991 and 1992, the reduction was 25 percent of the water used for M&I uses and 75 percent of the water for agricultural uses. Available surface water was supplemented with groundwater from wells located near the southern boundary of the district. These reductions in supply caused severe drought restrictions to be imposed, which have had a continuing impact on district water sales. The supplementary water provided by the wells constitutes about 10 percent of the supply normally available from the river and about 15 to 20 percent of the reduced supply during a severe drought year. The aquifers within the district have limited yield, so it is not practical to greatly increase production of wells within the district.

The BVWD supply system consists of the Wintu Pump Station on the Sacramento River and five wells. Water pumped from the river is treated at the district's treatment plant, which provides in-line filtration. Distribution facilities include a network of transmission and distribution pipelines, three storage tanks, nine booster pump stations, and pressure-reducing facilities. The major distribution piping was installed by Reclamation, but has been extended considerably to serve many subareas. Funding for initial system construction was through an extension of the CVP for the main supply facilities and through a loan from Reclamation for the distribution system. The main supply system is still owned by the U.S. Government, but was constructed solely for use by BVWD. Both domestic and agricultural users are served through

the same distribution system, so all water is treated to meet the higher water quality standards for domestic use. The CVP water that BVWD formerly purchased from Shasta County Water Agency (proposed for assignment to Bella Vista in the contract renewal) is described below under “Shasta County Water Agency.”

Centerville Community Services District

The CCSD was originally formed in September 1959 under California Government Code, Division 3, Community Services Districts, Section 61000, et seq. The purpose for creating the district was to (a) supply the inhabitants of the district with water for domestic use, irrigation, sanitation, industrial use, fire protection, and recreation and (b) to provide fire protection services. The service boundary currently encompasses 11,278 acres in the unincorporated area of the Shasta County immediately west of the City of Redding. CCSD provides municipal and industrial water to 1,125 metered connections that serve a population of approximately 2,850 according to the latest census survey. CCSD's water supply comes from surface water from the Whiskeytown Reservoir and is treated at a plant located at the base of Whiskeytown Dam. The treatment plant has an approximate capacity of 30 million gallons per day (mgd). The treated water is transmitted via the 45-inch Muletown Conduit to the headworks of the distribution facility located in the vicinity of Muletown Road and Clear Creek Knolls Road. The district shares the inline treatment facility with the CCCSD.

CCSD has a contract with CCCSD that allocates CCSD a 25 percent share of the capacity. CCSD currently holds two contracts with Reclamation for a total allocation of 3,800 acre-feet per year. The first contract (No. 14-06-200-3367X) is an Assignment Contract which was entered into on April 11, 2001. This contract permanently assigned 2,900 acre-feet per year of CVP water from Shasta County's 5,000-acre-foot per year contract with Reclamation. This contract carries with it those terms and conditions defined in the County's contract (No.14-06-200-3367A), which also includes a Binding Agreement for Early Renewal. The second contract (No. 00-WC-20-1708) is an Exchange Contract and was entered into on August 11, 2000. This contract for 900 acre-feet per year with Reclamation was to provide CCSD with substitute project water for its pre-1914 water rights on Clear Creek. The CCWD does not have access to a ground water supply source (10/03 personal communication).

City of Redding (Sacramento River, Spring Creek, Toyon) (Buckeye Zone)

The City of Redding is the largest city in Shasta County, with a population of approximately 84,600 (2002). Prior to 1941, water service within the City of Redding was provided by non-CVP contracts with Reclamation via the California Water Service Company, whose water rights dated from 1886. The city acquired the local facilities and water rights of the company in 1941 and filed for additional appropriative water rights of 5 cubic feet per second (cfs) in 1944. Subsequent annexations to the city's service area include the Buckeye County Water District, the Cascade Community Services District, and the Enterprise Public Utility District in 1967, 1976, and 1977, respectively. The city provides CVP and non-CVP water service to about 24,709 (09/00 personal communication) service connections. All connections are for municipal and industrial uses with only incidental agricultural uses.

The city currently administers the Buckeye zone under a long-term CVP contract. The Buckeye zone service area includes two City of Redding pressure zones: Buckeye and Summit City. Approximately half of the Buckeye zone is located within the Redding city limits, and the other half is in an unincorporated area of Shasta County. ~~The~~ Approximately one-quarter of the Summit City zone falls entirely within an unincorporated area of Shasta County, and three-quarters fall within the city limits of the City of Shasta Lake. There are 4,179 connections in the Buckeye zone. The Buckeye zone receives water from Whiskeytown Lake via the Spring Creek conduit. During peak demand periods, supplemental water is pumped from the Sacramento River, then treated, and delivered into the Buckeye zone service area ~~at the CVP price.~~ The 58 M&I connections in the Summit City zone are supplied exclusively by water diverted from Shasta Lake via the Toyon pipeline. The water is treated by the City of Shasta Lake and delivered to the Summit City zone at the CVP price. There are no known groundwater resources within the Buckeye zone service area.

The city has ~~two~~ one additional water contracts with Reclamation. ~~One additional contract which is Redding's 1996 1966 Settlement Contract with Reclamation, which specifies a "Base Supply" and a "Project Water Supply." The Base Supply was 15,385 acre-feet in 1995 and increased by 255 acre-feet per year to a maximum of 17,850 acre-feet per year in 2003. The Project Water Supply was 2,715 acre-feet in 1995 and increased by 45 acre-feet per year to 3,150 acre-feet per year in 2003. The total 1996 entitlement was 18,400 acre-feet per year, and the total 2003 entitlement was 21,000 acre-feet per year. The city's other contract with Reclamation is a CVP long-term water service contract that provides 9,290 acre-feet (according to PEIS data sources).~~

The city's surface-water supply comes from the Sacramento River and Whiskeytown Lake. Sacramento River water is treated at the 24 mgd Foothill Water Treatment Plant, and the Whiskeytown Lake water is treated at the 7 mgd Buckeye Water Treatment Plant.

Redding supplements its surface-water supply with well production capacity from the Redding Groundwater Basin. Currently, 14 wells are operational, providing a total capacity of up to 12 mgd. The well systems are used to supplement the city's surface-water supplies, primarily during peak demand periods. The return flow of groundwater to the river from the City's wastewater treatment facilities contributes to water supplies for downstream users.

City of Shasta Lake

The City of Shasta Lake was incorporated in 1993, and has a population of nearly 10,000 (2003). Prior to incorporation, utility services, including water supply, were provided by the Shasta Dam Area Public Utilities District (PUD). The PUD was formed in 1945 to provide a reliable water supply for an area of 3.5 square miles. Prior to formation of the PUD, water was supplied by a series of wells with low and unreliable yields. Originally, the PUD's service area was a residential area established to house workers constructing Shasta Dam. Reclamation constructed a water transmission pipeline from Shasta Lake to the PUD in 1948 and concurrently the PUD constructed water storage and distribution systems. The Summit City PUD was annexed in 1978.

Today, the City of Shasta Lake provides water service to 3,800 (2003) service connections. Urban and residential land uses predominate.

Water is obtained exclusively from Shasta Lake via a pump station at Shasta Dam, with a maximum diversion of 5.0 mgd. An interim contract with Reclamation (Contract No. 4-7-20-~~W~~W1134-IR210) provides an allocation of ~~2,750~~ 4,400 acre-feet per year from this source. Reclaimed water is also available for industrial and landscaping use. Groundwater use is limited because of low aquifer yields.

Clear Creek Community Services District

In 1891, the Happy Valley Irrigation District was formed. The source of water was Rainbow Lake. Through the district, the water users attempted to buy Dry Creek Flume and Tunnel Company's canal system, but negotiations were unsuccessful. In 1902, the Happy Valley Land and Water Company was formed and sold stock to the farmers and non-resident land owners with the understanding that each share of stock carried water for one acre of land, causing the land value to increase dramatically. However, Happy Valley Land and Water Company's revenues were not sufficient to do necessary maintenance, and the Happy Valley Irrigation District was eventually formed (using the same name as the District formed in 1891). The Legislature passed an Act in 1917 validating the organization of the District. This Act assured the stability of Irrigation District Bonds. The Happy Valley Irrigation District eventually went bankrupt, and residents were left only with private wells. CCCSD was formed in 1961. The facilities were designed and constructed by Reclamation, and the District began operating in 1967.

CCCSD presently encompasses about 14,314 acres, ~~including several large annexations~~. At the present time, of the 14,314 acres within the district's service area, there are approximately 5,817 acres of irrigated agricultural land, approximately 4,000 acres of rural residences receiving M&I water, and approximately 4,497 acres that are undeveloped.

The district developed the first of three proposed wells and installed 13,800 feet of 18-inch pipeline to connect the groundwater supply to the distribution system. The system and single well went online in October 1992. Well #1 and two proposed wells are intended for use only when surface supplies are inadequate to meet demand or for emergencies.

The majority of the developed agricultural property in the district is ditch- or flood-irrigated. The balance of irrigation is done by overhead and drip systems.

The population served by the CCCSD is scattered throughout a rural environment, and no urban centers exist. The district's population has, in recent years, been increasing at about a 2 to 3 percent annual rate due to its attractive small farm atmosphere where residents can have a few head of cattle on several acres of irrigated pasture.

CCCSD is located approximately ~~10~~ ten air miles southwest of Redding and six air miles west of Anderson in southern Shasta County. The area served by the district is situated on a plateau, which rises from the floor of the Sacramento Valley. The plateau ranges in elevation from 450 to 900 feet and is dissected by deep washes that provide seasonal drainage. The district's service area includes the rural areas known as Olinda and Cloverdale. The overall general area served by the District is commonly referred to as Happy Valley.

The source of the district's water supply is Whiskeytown Lake, a reservoir formed by Clear Creek waters impounded by Whiskeytown Dam. The reservoir covers about 3,250 acres at maximum capacity, providing water storage of about 241,000 acre feet. The reservoir provides the capacity to regulate the flows of the Clear Creek watershed and the imported flows from the Trinity River, which discharge through the Carr Powerhouse into the reservoir. Releases are made from the reservoir to the Sacramento River through the Spring Creek Tunnel and downstream through Clear Creek. Water is diverted to the district through two intakes in the earthen-fill dam structure, one at an elevation of 1,110 feet and the other at an elevation of 965 feet. The ability to select the depth of the diverted water gives the District the capacity to draw less turbid water.

The district is served by an aqueduct that begins at outlets in Whiskeytown Dam and terminates at a 250,000-gallon control tank about eight and one half miles south of the Dam. This aqueduct, commonly called the Muletown Aqueduct (also Muletown Conduit), consists of about 27,500 feet of 45-inch pipe and 17,400 feet of 42-inch pipe buried ~~along a rather tortuous route~~ along Muletown Road, paralleling Clear Creek. The coal tar enamel-lined and coated steel pipe was installed in 1965. The district's water system, designed and constructed by Reclamation, was completed and the District began operation in 1967. The distribution system within the district's boundaries consists of approximately 75 miles of pipe ranging in size from 2 inches to 45 inches. Title to the distribution system was transferred to the District on May 29, 2001.

The district has one storage tank along the conduit with a 1 million gallon capacity. There is also one control tank for pressure regulation at the upper elevation of the district with a 250,000 gallon capacity. The storage tank at the booster station facility, outside district boundaries, is 32,000 gallons.

Shasta Community Services District

SCSD is located west of the City of Redding. SCSD was formed in June 1959 under the Community Services District Laws, Sections 61000 through 61934 of the Governmental Code of the State of California. The district was formed for the primary purpose of supplying water for domestic use and fire protection to the town of Shasta and adjacent developed areas of the district. The district currently serves 630 connections. Virtually all of the active land use is municipal, consisting primarily of ranchettes.

Congress authorized a water system for the area as part of the Trinity River Project. Bonds were issued by SCSD to finance construction of the transmission and distribution systems. These bonds have since been repaid.

CVP long-term service contract water ~~is provided~~ is provided for up to 1,000 acre-feet annually. Water is supplied by gravity from Whiskeytown Lake via a turnout on the Spring Creek Conduit. The Spring Creek Conduit is the only source of supply, and there is only 0.30 million gallons of storage located near the source. Downstream of the turnout, a single transmission main serves as the backbone of the distribution system and most mains are not looped.

SCSD has historically been vulnerable to disruptions in supply from its Reclamation contract. During the 1991 drought, Reclamation reduced SCSD's allotment by ~~75~~ 25 percent to ~~250~~ 750 acre-feet per year. Groundwater wells are not feasible because the district does not overlay an aquifer.

Shasta County Water Agency

The Shasta County Department of Water Resources was created in 1954 to organize Shasta County's efforts in conjunction with the Trinity River Project. This led to the formation of the SCWA in 1957 through the Shasta County Water Agency Act, Legislative Act 7580. The SCWA was created to control and conserve surface water for the beneficial use and protection of life and property of the people of Shasta County. Funding for the SCWA comes from Shasta County property taxes.

The SCWA actively promotes the creation of public water and sewer systems. The agency was instrumental in the creation of BVWD, Centerville Community Services District, CCCSD, and SCSD, as well as six county service areas for water and two for sewer service.

In 1967, the SCWA negotiated a 37-year contract with Reclamation for 5,000 acre-feet of "Project Water" or replacement water. This water was is wholesaled to 14 subcontractors throughout the county, but portions have been or are being assigned to Centerville (2900 acre-feet), Mountain Gate (1,000 acre-feet), and Bella Vista (578.7 acre-feet). The 500 acre-feet the County has under the KCSA contract would be combined with the SCWA contract during a contract renewal for administrative simplicity. "Project Water" may be used for municipal, industrial, and domestic use, and replacement water may be used for agricultural purposes and/or municipal, industrial, and domestic uses.

Other Shasta and Trinity River Divisions CVP Contractors

Three smaller water districts are included in the Shasta and Trinity River Divisions. The three districts constitute about 1 percent of the CVP long-term contract water supply to the divisions.

Keswick County Service Area

The KCSA is located west of the City of Redding. KCSA was preceded by the Keswick Community Services District, which was formed in the early 1960s under the Community Services District Laws, Sections 61000 through 61934 of the Governmental Code of the State of California. The district was formed for the primary purpose of supplying water for domestic use and fire protection to the town of Keswick and adjacent developed areas. Congress authorized a water system for the area as part of the Trinity Project Act (69 Stat. 719) and the facilities were constructed in 1965. A repayment schedule was established whereby the Federal government is reimbursed by KCSA for transmission and distribution system construction costs. However, upon completion of repayment, ownership of all project facilities will still remain with the Federal government. On October 23, 1990, the Keswick Community Services District was dissolved and reorganized as the Keswick County Service Area under Sections 25210.1 through 25250 of the Governmental Code of the State of California. KCSA serves about 195 connections (2000), which are concentrated in the town of Keswick. The district boundaries encompass facilities not served by the district, including Keswick Dam and the Spring Creek Diversion Dam. The land uses served by KCSA are exclusively ranchettes.

Federal CVP water is provided under the terms of a contract with Reclamation. The contract (to be combined with the SCWA contract) provides for deliveries of up to 500 acre-feet annually. Water is supplied by gravity flow from Whiskeytown Lake via a turnout on the Spring Creek Conduit, which feeds the Spring Creek powerhouse. Two storage tanks provide total storage of 0.2 million gallons.

Mountain Gate Community Services District

MGCSO is located north of the City of Shasta Lake. MGCSO was formed pursuant to Government Code, Title 6, Division 3, Sections 61000 through 61800. MGCSO was initially formed in 1956 to provide water service within a ~~two~~-square-mile area. MGCSO provides water service to 593 connections (2000). In addition, the district provides fire protection services in its service area. The primary land use is ranchettes. Other significant uses are urban and industrial.

MGCSO obtains CVP water from Shasta Lake under the terms of a contract with Reclamation for 350 acre-feet per year. This contract allotment was ~~is~~ supplemented by an additional 1,000 acre-feet via a contract with the SCWA., that was assigned to MGCSO February 22, 2005. The district also operates three wells within a small usable aquifer. These wells supply nearly half of MGCSO's total needs annually. The distribution system consists of 29 miles of pipelines serving 3,750 acres within the MGCSO, in addition to Bridge Bay Resort, which is located on the USFS land adjacent to Shasta Lake. There is no storage within the district.

USFS Centimudi Boat Ramp

The Centimudi boat ramp is part of the original Centimudi Marina Project located east/southeast of Shasta Dam. The Memorandum of Agreement signed November 8, 1967, between the USFS and Reclamation (Contract No. 14-06-200-3464A) stipulated that the USFS could divert up to ~~10~~ ten acre-feet of municipal, industrial, and domestic water from the Toyon Pipeline to supply the Centimudi Marina Project. The Toyon Pipeline, a Reclamation facility, originated from the left abutment of Shasta Dam and diverted water to a point near the Government Camp at Toyon (west of the City of Shasta Lake). The USFS agreed to construct, operate, and maintain the pipelines, pumps, and meters to facilitate the water diversion. Further, the USFS agreed to assume responsibility for controlling and distributing the water. ~~Currently the Marina is serviced by the Shasta Community Services District.~~

4.2.2 ENVIRONMENTAL CONSEQUENCES

The effects of Alternatives 1 and 2 on surface water supplies and operations are compared to conditions under the No Action Alternative.

No Action Alternative

Under the No Action Alternative, it is assumed that historic annual surface water supplies under CVP operations plans would be similar to existing conditions to Contractors in the Shasta and Trinity River Divisions. Under the No Action Alternative, ~~the water supply would be affected by climate conditions. During the driest years, tiered water pricing would become a requirement of each Contractor's long-term contract renewal. Under tiered water pricing under for the No Action Alternative, 80 percent of the Contractor's M&I water supply would be supplied prior to meeting the agricultural water demand. (Also, water conservation planning is a requirement of interim contracts and future long-term contract renewals.)~~

Alternative 1

Under Alternative 1, the water supply available for delivery to the Contractors is assumed to be similar to the No Action Alternative. Alternative 1 assumes that future long-term renewal contracts would be equal

to the ~~base~~ maximum quantity in existing long-term contracts or interim contracts. Therefore, the water supply would be the same as it would be under the No Action Alternative. Consequently, there would be no direct environmental consequences associated with water supply when compared to the No Action Alternative.

Alternative 2

Under Alternative 2, the water supply delivered is assumed to be the same as for the No Action Alternative. Alternative 2 assumes that the sum of Category 1 and 2 water is equal to the maximum quantity provided in the Contractors' existing water service contracts. Future long-term contracts are expected to be renewed for the same quantity of water as under the No Action Alternative. Therefore, there would be no direct adverse environmental consequences associated with water supply compared to the No Action Alternative.

4.2.3 CUMULATIVE EFFECTS

No environmental consequences to water supply are expected under Alternative 1 or 2 when compared to the No Action Alternative. Therefore, no cumulative effects are anticipated when compared to the No Action Alternative.

4.3 SOCIOECONOMICS

4.3.1 AFFECTED ENVIRONMENT

All of the water Contractors and service areas within the Shasta and Trinity River Divisions of the CVP potentially affected by CVP long-term water contract renewals are located in Shasta County. Accordingly, Shasta County was selected as the regional area of influence for the demographic, land use, and economic impact evaluation for Alternatives 1 and 2 and the No Action Alternative. To be consistent with the time frame of the affected environment and environmental consequences components of the CVPIA PEIS, 1994/95 data are included in the affected environment characterization for the evaluation of the CVP contract renewal alternatives under consideration (to the extent such data are available).

Demographics

Table 4.3-1 presents recent population estimates for Shasta County broken down by major ethnic group. The table indicates that the County's estimated population in the year 2000 was 172,000 (California Department of Finance [CDOF], 2003b).

**TABLE 4.3-1
 SHASTA COUNTY POPULATION**

Year	Total	White	Hispanic	Asian and Pacific	Black	American Indian
1995	159,700	141,767	7,592	3,465	1,447	6,773
1998	161,900	141,672	8,468	3,844	1,631	6,285
2000	163,256	141,721	8,975	4,058	1,729	5,429

Sources: State of California, Department of Finance, Race/Ethnic Population Estimates: Components of Change for California Counties, April 1990 to April 2000. Sacramento, California, March 2003; State of California, Department of Finance, E-1 City/County Population Estimates, with Annual Percent Change, January 1, 2002 and 2003. Sacramento, California, May 2003.

In 2003, approximately half of Shasta County's 172,000 residents lived in the County's largest city, Redding. In January 2003, Redding's population was approximately 85,700, 8 percent more than in 1998 (CDOF, 2002). The County's second most populated city, Shasta Lake, had a reported 2003 population of about 9,725 people. Approximately 40 percent, or 67,100, of Shasta County's residents live in the County's unincorporated areas (CDOF, 2003b).

Table 4.3-2 characterizes the overall housing situation within Shasta County. The table indicates that the County's housing vacancy rate was approximately 7.8 percent of existing housing units in 2003 (CDOF, 2003c).

**TABLE 4.3-2
 SHASTA COUNTY HOUSING (2003)**

Housing Stock	71,683
Single Units	50,064
Multiple Units	10,806
Mobile Homes, Trailers, etc.	10,813
Vacancy Rate	7.8%
Occupants per household	~2.5

Source: State of California, Department of Finance, E-5 City/County Population and Housing Estimates, 2003, Revised 2002 and Revised 2001, with 2000 DRU Benchmark. Sacramento, California, May 2003.

There are a total of 40 ten separate water districts/agencies (districts) within the Shasta and Trinity River Divisions of the CVP that currently receive CVP water designated for M&I uses through contracts undergoing the contract renewal process (referred to as contract water).

Table 4.3-3 presents 1994 estimates of the population served by the four largest of these districts, BVWD, CCCSD, City of Shasta Lake, and City of Redding (California Department of Water Resources 1994). In 1994, these districts together received almost 85 percent of the total CVP M&I contract water that was delivered to the Shasta and Trinity River Divisions.

**TABLE 4.3-3
 POPULATION SERVED WITHIN SELECTED WATER DISTRICTS (1994)**

	BVWD	CCCSD	City of Shasta Lake	City of Redding
Population Served	15,700	8,000	9,820	78,266

Source: California Department of Water Resources 1994

Municipal and Industrial Water Costs, Land Use, and Economics

The water Contractors, identified in Table 4.3-3, treat and deliver CVP and other water to residential, commercial, and industrial customers within their service areas. Table 4.3-4 itemizes the number of M&I service connections reported by each district in 1994, by service connection category.

**TABLE 4.3-4
 M&I SERVICE CONNECTIONS WITHIN LARGEST WATER DISTRICTS* BY M&I CATEGORY (1994)**

Service Connection Category	BVWD	CCCSD	City of Shasta Lake	City of Redding	Total Connections *
Single-Family Residential	233	1,441	2,997	18,643	23,314
Multi-family Residential			289	456	745
Commercial/Institutional	158		189	3,837	4,026
Industrial		1	5	464	470
Other (government)				195	195
Landscape Irrigation				3	3
Other (rural)	864				864
Total Connections *	3,855	1,442	3,480	23,598 **	32,375 **

Source: California Department of Water Resources 1994

*Some of the districts do not report separately for single- and multi-family residential connections. These connections represent approximately 85% of the Shasta and Trinity River Divisions.

**Includes ~4,179 connections for CVP water under Buckeye Contract.

Table 4.3-5 presents estimated water deliveries by service connection category for each of the water districts presented in Table 4.3-4. All of these water deliveries were metered, except the City of Redding's deliveries to its landscape irrigation users. The table indicates that about half of the City of Redding's 1994 M&I water deliveries were for landscape irrigation purposes. (A review of reported customer water deliveries in 1999 indicates that deliveries categorized under landscape irrigation were greatly reduced in that year from the 1994 levels. At the same time, the City's reported single-family residential deliveries increased substantially, despite little change in the Redding service area population.)

**TABLE 4.3-5
 1994 DELIVERIES OF TREATED WATER TO M&I CUSTOMERS BY M&I CATEGORY
 (ACRE-FEET PER YEAR)**

Service Connection Category	BVWD	CCCSD	City of Shasta Lake	City of Redding
Single-Family Residential	2,030	471	1,573	12,520
Multi-family Residential			110	258
Commercial/Institutional	1,401	2	333	7,524
Industrial			74	476
Other (government)				566
Landscape Irrigation				21,354
Other (rural)	1,891			
Total Per District in Acre-Feet Per Year	5,321	474	2,090	42,699 *
1994 Average (acre-feet per year per connection) (Connection data from Table 4.3-4)	1.38	0.33	0.6	1.81

Source: California Department of Water Resources, 1994
 Includes the Buckeye Contract for CVP water as well as other agreements and contracts.

Table 4.3-6 presents the estimated M&I deliveries of CVP water in 1994 to each of the CVP Shasta and Trinity River Contractors that receive CVP water designated for M&I uses (Reclamation 2000). (In 2001, 2,900 acre-feet of water previously assigned to under contract with the Shasta County Water Agency was reassigned to Centerville Community Services District. The tables in this section currently include the CCCSD assignment from the Shasta County Water Agency. See footnote in tables.)

**TABLE 4.3-6
 CVP CONTRACT MAXIMUM, M&I DELIVERIES AND ESTIMATED COST (1994)**

Factor	MGCSO	City of Shasta Lake	USFS	KCSA	SCSD	SCWA (Including CCCSD)*	BVWD	CCCSD	City of Redding (1)
CVP Contract Maximum (acre-feet)	350	2,750	10	500	1,000	5,000*	22,000 24,000	15,300	9,250(4) 6,140(1)
Estimated M&I Deliveries (acre-feet)	350	2,410	10	158	593	1,267*	5,567	1,928	2,822
1994 Cost-of-Service Rate (per acre-foot)	\$9.00	\$13.82	\$20.00	\$13.17	\$10.77	\$19.44*	\$39.00	\$26.09	\$11.40
Total Estimated Cost	\$3,150	\$33,306	\$200	\$2,081	\$6,387	\$24,630*	\$217,113	\$50,302	\$32,171

Source: Bureau of Reclamation 2000a, Bureau of Reclamation 1994a, Dornbusch & Company
 (1) **Also receives** includes 3,150 acre-feet of settlement water, and ~~6,100-6,140~~ acre-feet of CVP under Buckeye Contract water
 * Includes 2,900 acre-feet per year which was assigned by contract to CCCSD by Reclamation in April 2001

A comparison of Tables 4.3-5 and 4.3-6 indicates that BVWD, CCCSD, and the City of Shasta Lake receive the majority of their M&I water through CVP long-term renewal contracts. The disparity between CCCSD's 1994 CVP deliveries (1,928 acre-feet) and the district's treated deliveries to its M&I customers (474 acre-feet) may be explained by the fact that CCCSD sells some of its M&I water to other districts, including BVWD. A comparison of the two tables also reveals that only a relatively small portion of the

City of Redding’s M&I water comes from its contract water. However, the entire Buckeye contract (City of Redding) receives 100% of its M&I water from the CVP.

Table 4.3-6 also presents the 1994 M&I contract cost-of-service rates published by Reclamation applicable to each district’s contract water. The table shows the estimated total cost-of-service incurred by each district in that year based on their recorded CVP M&I contract water deliveries. In 1999, the City of Shasta Lake’s average household water bill per 1,000 cubic feet of water was approximately \$15.40 per month (City of Shasta Lake 2000). This translates to about \$670 per acre-foot. (One acre-foot of water equals 43,560 cubic feet of water or the amount of water a family of five uses a year.) In 1999, the City of Shasta Lake paid a cost-of-service rate for untreated CVP water of \$15 per acre-foot (compared to \$13.82 in 1994, as shown in Table 4.3-6). Accordingly, the actual average cost of CVP water treated and delivered to residential customers within the City of Shasta Lake in 1999 was almost 45 times the cost-of-service rate that they paid for that water. This is to be expected since an M&I district’s cost of untreated water is usually a relatively small component of its cost to treat, store, and deliver water to its customers (and thus the rates charged to its customers). Similar findings would be expected for the other Shasta and Trinity River Divisions ~~water districts~~ contractors.

Agriculture Water Costs, Land Use, and Economics

Both BVWD and CCCSD supply treated contract water designated for agricultural purposes to irrigators within their service areas. In 1996, a total of 7,319 acres of land within the two districts that were designated for CVP agricultural water use were irrigated with CVP water: 3,388 acres in BVWD and 3,931 acres in CCCSD (Reclamation 1996). The districts together received approximately 10,000 acre-feet of CVP agricultural contract water in 1994 (purchases from other CVP Contractors aside).

While field, vegetable, and fruit crops are grown in the County and the districts, pasture is by far the predominant crop, representing about 50 percent of irrigated agriculture in the county. Table 4.3-7 summarizes the cropping pattern for each district, as reported to Reclamation for 1996. The table indicates that like Shasta County as a whole, a large portion of the both districts’ irrigated lands is in pasture, particularly BVWD.

**TABLE 4.3-7
 CROPPING PATTERNS (1996)**

Crop / Crop Group	BVWD (acres)	Percentage of BVWD Total	CCCSD (acres)	Percentage of CCCSD Total
Pasture	2,813	84.7%	1,785	48.5%
Alfalfa	217	6.5%	25	0.7%
Sugar Beets		0.0%		0.0%
Other Field Crops	176	5.3%	738	20.0%
Rice		0.0%		0.0%
Truck Crops	1	0.0%	86	2.3%
Tomatoes	1	0.0%	30	0.8%
Deciduous Orchards	52	1.6%	993	27.0%
Small Grain	63	1.9%		0.0%
Subtropical Orchard		0.0%	24	0.7%
Total	3,323		3,681	

Source: Bureau of Reclamation 1996 and Dornbusch & Company 2000

The Census of Agriculture reports that in 1997, there were 850 farms in Shasta County, of which 605 had some or all of their land under irrigation. Total irrigated acreage within the County reported in 1997 was approximately 38,863 acres (NASS 1999). Accordingly, lands receiving CVP water designated for irrigation with CVP agricultural water within the BVWD and CCCSD represent about 20 percent of the county’s total irrigated land base.

Much of the irrigated lands in Shasta County and, in particular, in the BVWD and CCCSD, consists of relatively small parcels. The 1997 Census of Agricultural indicates that over half of the irrigated farms within Shasta County are less than 9 nine acres in size. Table 4.3-8 shows the agricultural service connections and customer water deliveries reported by BVWD and CCCSD in 1994. The table also shows the estimated average amount of land per agricultural service connection in each district, 6.5 acres in BVWD and 5.5 acres in CCCSD. (These amounts are calculated by dividing the estimated amount of irrigated acres in each district in 1996 by the number of agricultural connections in 1994. Acreage in 1996 was used because Reclamation was unable to provide accurate irrigated acreage information from 1994. Discussions with local extension agents and others familiar with irrigated farming in Shasta County suggested that the irrigated land base in the BVWD and CCCSD service areas changed little between 1994 and 1996. Therefore, the calculation of irrigated land per connection is deemed reasonable.)

CCCSD reports that in 1999, there were 350 and 338 parcels between 2 and 5 acres in size within the CCCSD and BVWD service areas, respectively, receiving CVP agricultural water (McNeill 2000). Based on the values presented in Table 4.3-8, 2- to 5-acre parcels account for about 50 percent of the CCCSD and 65 percent of the BVWD agricultural service connections.

**TABLE 4.3-8
 AGRICULTURAL CONNECTIONS AND WATER DELIVERIES (1994)**

Factor	BVWD	CCCSD
Irrigated Land (acres) – 1996	3,388	3,931
Agricultural Connections – 1994	524	715
Irrigated Land/Connection (acres)	6.5	5.5
Agricultural Deliveries (acre-feet)	7,247	1,129

Source: California Department of Water Resources 1994, Dornbusch & Company 2000

Table 4.3-9 presents the 1994 cost-of-service rates published by Reclamation for Shasta and Trinity River Divisions agricultural contract water. Cost-of-service (COS) is a term used by Reclamation that refers to the annual rate to be paid by water Contractors to recover federal costs for agricultural and M&I water supply functions for an established repayment period, ~~and according to specific provisions in their respective contracts.~~ This rate includes the recovery cost from each Contractor for capital (construction) investment of CVP; accumulated annual O&M, O&M deficit, and interest (M&I only). The table also shows the total cost-of-service incurred by each district in that year based on their recorded CVP agricultural contract water deliveries. Both BVWD and CCCSD receive ability-to-pay relief on their CVP agricultural water. However, no downward adjustment was made to reflect the associated cost savings because no actual records of either district’s payments to Reclamation were available.

**TABLE 4.3-9
 CONTRACT MAXIMUM, AGRICULTURAL DELIVERIES AND ESTIMATED COST BASED ON
 COST-OF-SERVICE RATES (1994)**

Factor	BVWD	CCCSD
CVP Contract Maximum (acre-feet)	24,000	15,300
1994 CVP Agricultural Deliveries (acre-feet)	6,826	3,289
1994 Cost-of-Service Rate (\$ per acre-feet))	\$11.78	\$15.79
Total Estimated Cost (\$)	\$80,410	\$51,933

Source: Bureau of Reclamation 2000a, Bureau of Reclamation 1994b, Dornbusch & Company 2000

Regional Economy

Shasta County’s largest industrial sector is services. In 1991, the services sector accounted for about 25 percent of the county’s employment base, climbing to almost 32 percent by 1995. Services continue to represent the fastest growing segment of the economy, followed by trade. Agriculture accounts for less than 2 percent of the county’s employment (EDD 2001).

The estimated average annual unemployment rate for Shasta County in 2002 was 7.4 percent (EDD 2002). The unemployment rate has declined from double-digit levels in the early part of the 1990s, and it exceeds the California state-wide average by less than 1 percentage point (the average annual unemployment rate for California in 2002 was 6.7 percent, [EDD 2002]). However, Shasta County ranked 32nd out of California’s 58 counties with respect to per-capita income in 2001 (BEA 2003).

Table 4.3-10 summarizes 1991 industrial output, employment, and income by place-of-work for the county. Data from 1991 were used rather than more current information to be consistent with the temporal setting of the regional economic analysis presented in the PEIS for the CVPIA. California’s

Employment Development Department (EDD) reported that the county’s unemployment rate in 1991 was almost 11 percent (EDD 1999).

**TABLE 4.3-10
 ESTIMATED OUTPUT, EMPLOYMENT, AND INCOME BY PLACE-OF-WORK SHASTA
 COUNTY (1991)**

Industrial Sector	Industrial Output	Employment	Income POW
	(Million\$)	(Full-Time Jobs)	(Million\$)
Agriculture	\$130.53	2,332	\$60.98
Mining	\$497.41	272	\$419.96
Construction	\$604.27	6,746	\$200.61
Manufacturing	\$684.34	5,270	\$258.52
Transportation	\$478.03	4,115	\$246.68
Trade	\$583.20	16,581	\$334.48
Fire	\$594.88	6,100	\$373.84
Services	\$808.69	18,751	\$469.00
Government	\$360.44	11,404	\$331.23
	\$4,741.79	71,571	\$2,695.30

Source: Minnesota Implan Group 1994, Dornbusch & Company 2000

4.3.2 METHODOLOGY OF SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS

The estimated socioeconomic and land use impacts of the contract renewal alternatives are presented in ranges. These ranges extend from the baseline socioeconomic and land use conditions under the No Action Alternative to the potential maximum socioeconomic and land use impacts anticipated under Alternative 2 when compared to the No Action Alternative. In this manner, the evaluation provides “bookends” with which to consider the potential implications of alternative contract renewal options. Alternative 1 is ostensibly identical to the No Action Alternative framework with respect to those elements, particularly water rate setting, that may affect socioeconomics and land use within Shasta County. All of the impacts of Alternative 2 are presented in terms of the incremental change relative to projected No Action conditions. The analysis is conducted for the 25 year contract ~~year 25~~ (2029); however, dollars are reported in 1999, 1994, and 1991 terms, depending on the availability of information and the time frame of the analysis, as well as to maintain consistency with the CVPIA PEIS. It also should be noted that to maintain consistency with the CVPIA PEIS, BVWD and CCCSD projected future CVP M&I and agricultural water use is based on agricultural and M&I land use and development projections reported in the Shasta County General Plan. As such, the M&I and agricultural water and land use projections presented in this EA may differ from projections indicated by other planning documents, including the future water needs assessments submitted to Reclamation by the districts as part of the contract renewal process. However, the projections all call for full use of the contract amounts by ~~contract year 25~~ (2029).

Methodology

The analysis of potential impacts on M&I and agricultural land use, M&I and agricultural water cost, and agricultural economics of Shasta and Trinity River Divisions long-term contract renewals is conducted at the level of the specific CVP Contractors that would be affected. However, the analysis of potential regional economic and demographic impacts of contract renewal is conducted at a broader regional level.

For the analysis, the affected region is defined as Shasta County. While the secondary economic and demographic effects of the alternatives may extend outside of Shasta County, it is reasonable to anticipate that the majority of those impacts will occur within the county. Ultimately, it is the localized effects of contract renewal that are most relevant to the evaluation of the effects of the alternatives on local communities.

Demographic Impacts

The evaluation of the potential demographic impacts of long-term CVP contract renewal for CVP Contractors in the Shasta and Trinity River Divisions focuses on population. The analysis starts with an assessment of contract renewal-associated regional effects on employment (discussed below), since employment is a primary determinant of population dynamics. However, anticipated regional change in job availability is not the only factor that must be examined in assessing population effects of an action such as CVP contract renewal. The projected population impact of employment changes must be evaluated in the context of general labor market conditions and family size within the relevant area of study. Accordingly, both of these variables are considered in the evaluation of the potential population impacts of contract renewal. California Department of Finance population projections for Shasta County were used as the basis for estimating population conditions under the No Action Alternative.

Municipal and Industrial Water

The assessment of the potential incremental impacts on the cost of M&I water under Alternatives 1 and 2 relative to the No Action Alternative is based on M&I water demand models developed for the CVPIA PEIS. A detailed description of those models is presented in the Municipal Water Costs Technical Appendix for the PEIS (PEIS 1997). In summary, the PEIS M&I models are designed to estimate the potential impact on the cost of CVP M&I water due to anticipated CVPIA-associated changes in CVP water rates and water deliveries. Thus, the M&I water cost impacts presented in the PEIS derive from the proposed introduction of 80-10-10 tiered pricing, a flat restoration charge applied to each acre-foot of delivered water, and the anticipated cost incurred by individual CVP Contractors to acquire alternative water supplies and implement conservation measures to mitigate water delivery reductions due to CVPIA-mandated in-stream and refuge flow set-asides.

The primary source of data used to model water demands, local supplies, and costs in evaluating contract renewal socioeconomic and land use impacts was the California Department of Water Resources Bulletin 160-93. While the information in Bulletin 160-93 was updated in Bulletin 160-98, Bulletin 160-93 was used to be consistent with the CVPIA PEIS analysis assumptions (CDWR 1993). Estimates of future CVP deliveries with and without CVPIA were derived using the PROSIM and SANJASM models (see PEIS, technical appendices for a description of these hydrologic modeling tools).

The results of the analysis of impacts on water cost in the CVPIA PEIS were aggregated into four regions. The Shasta and Trinity River Divisions were included in the Sacramento Valley region.

An implicit assumption of the PEIS M&I cost impact analysis was that both residential and commercial/industrial water users are extremely *price inelastic* within a fairly large range of prices for water (i.e., they will effectively not change their use of water in response to even fairly substantial changes in the price of water). Certainly, price does influence the choice of water supply. However, in the case of Shasta and Trinity River Divisions long-term contract renewals, the PEIS analysis concluded that reliable non-CVP water supplies would cost well in excess of the effective CVP M&I water rates for any of the contract renewal proposals under consideration. Accordingly, no incremental change in future M&I demand for CVP water is anticipated under either Alternatives 1 or 2 when compared to the No Action Alternative.

Consistent with the CVPIA PEIS, the analysis of the socioeconomic impacts of contract renewals focuses on both the long-run average and short-run dry hydrologic conditions, and associated CVP deliveries. Projected post-CVPIA CVP M&I deliveries were obtained from the PEIS M&I models prepared by Reclamation.

The M&I cost analysis of the Preferred Alternative in the CVPIA PEIS (No Action Alternative in this EA) was conducted assuming 80-10-10 tiered pricing and 1994 CVP M&I rates. Alternative 1 does not alter the rate-setting scheme stipulated in the No Action Alternative and, therefore, would not have an incremental impact on Shasta and Trinity River Divisions CVP M&I water costs relative to the No Action Alternative. Alternative 2, however, would have an impact on Shasta and Trinity River Division Contractors' costs for CVP M&I water.

The M&I cost impact analysis for Alternative 2 assumed the adoption of 80-10-10 tiered pricing, Category 1/ Category 2 water designation, and the 1999 Shasta and Trinity Contractors' CVP M&I rates adjusted to reflect the Alternative 2 proposed revision to the CVP rate-setting methodology. More current estimates of CVP M&I rates consistent with the revision methodology (PEIS 1997) are not available because the methodology has since been dropped from consideration.

The projected impacts of Alternative 2 in contract year 25 (2029) M&I water costs are presented in 1999 dollar terms as the increment above each potentially affected long-term renewal Contractor's estimated cost of CVP M&I water under the No Action Alternative for both the long-run average and short-run dry hydrologic condition.

CVP M&I water rates under Alternatives 1 and 2 are not expected to have any impact on Shasta and Trinity River Divisions' CVP M&I water demand. In addition, the two alternatives do not differ from the No Action Alternative with respect to projected CVP water supply/reliability. Therefore, it is not anticipated there will be any M&I water-related demographic or land use impacts of the contract renewal alternatives. Accordingly, demographic and land use impacts are not addressed in the contract renewal M&I impact analysis. The analysis examines only Shasta and Trinity River Divisions' water-cost-related impacts. As in the CVPIA PEIS, it is assumed that any projected change in the cost of CVP water would be passed directly on to each district's customers, dollar for dollar.

Agricultural Water Cost, Land Use, and Economic Impacts

The assessment of the demographic and agricultural water cost, land use, and economic impacts under Alternatives 1 and 2 were based on the agricultural economic impact assessment models developed for the CVPIA PEIS (PEIS 1997). A detailed description of those models is presented in the Agricultural Economics and Land Use Technical Appendix to the PEIS. In summary, the PEIS agricultural economic and land use models were designed to estimate the potential direct impact of CVPIA-associated changes on agricultural water rates and supply/reliability on agricultural users, including land use, water use, gross value of crop production, and farmer net revenue from irrigation.

Agricultural economic and land use impacts identified in the PEIS resulted from the introduction of 80-10-10 tiered pricing, the addition of a restoration charge on each acre-foot of delivered water, and the projected cost to individual CVP Contractors of acquiring alternative water supplies to mitigate water delivery reductions due to CVPIA-mandated in-stream and refuge flows not offset through conservation. The PEIS agricultural economic impacts were derived by applying the Central Valley Production Model (CVPM). The CVPM is a highly sophisticated tool that predicts farmer response to changes in the price and availability of resource inputs, particularly water. The types of response mechanisms built into the model include land fallowing, crop switching, changes in ground water pumping, etc. These responses ultimately have implications for the total value of crop production, land and water use, and the net revenues to farmers subsequent to an event such as CVPIA implementation or contract renewal.

The CVPM model, as formatted for the PEIS, produces output for each of 22 separate sub regions within California's Central Valley (for reporting purposes in the PEIS, these sub regions were aggregated into four larger regions). The two CVP water Contractors in the Shasta and Trinity River Divisions that

receive CVP agricultural water and would potentially be affected by long-term contract renewals, BVWD and CCCSD, are located in CVPM Region 1. Accordingly, the output of the CVPM model runs for Region 1 were used to estimate the implications of the No Action Alternative and Alternatives 1 and 2 for the agricultural lands and economy within BVWD and CCCSD. Estimates of gross value of farm production derived from CVPM were combined with recent cropping-pattern information for BVWD and CCCSD to calculate district-specific estimates of the gross value of production and farmer net revenue under the contract renewal alternatives.

The No Action Alternative and Alternative 2 would increase the CVP agricultural acreage limitation from 2 to 5 acres. If implemented, this contract stipulation would not necessarily affect the delivery and cost of CVP water for agricultural irrigators on parcels smaller than 5 acres. According to Reclamation, it would simply place a greater burden of proof on those irrigators and their districts to demonstrate that the agricultural water they are receiving (at agricultural water rates) is being put to legitimate agricultural uses. Reclamation representatives believe that the change in acreage limitation would ultimately have little or no effect on the cost of water for farmers with parcels between 2 and 5 acres within the Shasta and Trinity River Divisions. It could, however, place an additional administrative burden on farmers and their districts in managing CVP deliveries (Holt 2000), although the burden would not be great since the applicable guidelines for determining agricultural use will remain unchanged.

4.3.3 ENVIRONMENTAL CONSEQUENCES

Demographics

No Action Alternative

Table 4.3-11 presents the projected year 2030 population for Shasta County. Under the No Action Alternative, population is forecast to increase by more than 50 percent from estimated levels in 2000.

TABLE 4.3-11
YEAR 2030 PROJECTED SHASTA COUNTY POPULATION

Year	Total	White	Hispanic	Asian and Pacific	Black	American Indian
2030	267,749	225,353	20,500	12,111	2,457	7,330

Source: CDOF 1998, Dornbusch & Company 2003

Alternative 1

The effects of Alternative 1 on demographics within the affected region are assumed to be similar to those of the No Action Alternative. Therefore, Alternative 1 would have no impact on demographics.

Alternative 2

Implementation of Alternative 2 could result in a loss of, or failure to create, as many as 46 jobs within Shasta County in contract year 25 (2029). Given historically high unemployment within the County and adjacent region, it is not anticipated that the workers who would be displaced could readily find alternative employment. Accordingly, the loss of employment under Alternative 2 could result in a long-run decrease in the Shasta County population of at most about 100 people, or approximately 0.04 percent, when compared to projected population levels under the No Action Alternative. Alternative 2 would therefore have a minor effect on demographics in Shasta County.

Municipal and Industrial Water Costs, Land Use, and Economics

No Action Alternative

Table 4.3-12 presents the 1994 actual cost of service and estimated mid-tier and full-cost CVP M&I water rates for the Shasta and Trinity CVP Contractors that would be affected by contract renewal. The 1994 rates are presented because these are the rates applied in the most current evaluation of M&I water cost impacts available.

ESTIMATED 1994 M&I WATER RATES UNDER 80-10-10 TIERED PRICING, SHASTA AND TRINITY RIVER CONTRACTORS

CVP Contractor	Cost-of-Service Rate ¹	Midpoint ^{1,2}	Full-Cost Rate ¹
	1 st Tier (80%)	2 nd Tier (10%)	3 rd Tier (10%)
BVWD	\$39.00	\$44.99	\$50.00
CCCS	\$26.09	\$32.81	\$39.53
City of Redding ³	\$9.00-\$11.40	\$9.00-\$13.24	\$9.00-\$15.08
SCWA ⁴	\$19.44	\$23.02	\$26.60
MGCSD	\$9.00	\$9.45	\$9.90
KCSA	\$13.17	\$15.73	\$18.28
SCSD	\$10.77	\$12.62	\$14.47
City of Shasta Lake	\$13.82	\$13.82	\$13.82
USFS	\$20.00	\$20.00	\$20.00

Source: Bureau of Reclamation 1994a, Dornbusch & Company 2000

1 In 1994 the Bureau did not publish the full-cost rate for M&I water. Accordingly, these rates were estimated based on the ratio of the cost-of-service and full-cost rates for each CVP long-term renewal Contractor in 1997, the first year full-cost M&I rates were published.

2 Midpoint estimated as the simple average of the cost-of-service and full-cost rates.

3 City of Redding pays a range of prices for its CVP M&I water, since the water is delivered through different facilities.

4 Includes Centerville Community Services District.

Table 4.3-13 presents the projected contract year 25 (2029) No Action Alternative deliveries and cost of ~~Division~~ CVP M&I water under both average and dry hydrologic conditions for each Shasta and Trinity CVP Contractor that would be affected by contract renewal. The table indicates that the Contractors would pay a total of approximately \$1.1 million in contract year 25 (2029) for the untreated CVP M&I water they are projected to take delivery of in a year of average hydrologic conditions ~~per~~ under the CVP contracts ~~undergoing~~ in the renewal process (1999 dollar terms).

Alternative 1

Alternative 1 is assumed to have effects on M&I water costs for the affected water districts similar to the No Action Alternative. Therefore, there would be no environmental effects as a result of implementing this alternative.

**TABLE 4.3-13
 YEAR 2029 PROJECTED CVP M&I DELIVERIES AND WATER COST, NO ACTION ALTERNATIVE
 (1994 DOLLAR TERMS)**

CVP Contractor	CVP Contract Maximum (acre-feet)	Projected CVP M&I Deliveries, Average Condition (acre-feet)	Projected Cost of CVP M&I Water, Average Condition (\$000s)¹	Projected CVP M&I Deliveries, Dry Condition (acre-feet)	Projected Cost of CVP M&I Water, Dry Condition (\$000s)¹
BVWD	24,000	6,400	\$337.94	4,450	\$234.82
CCCSD	15,300	9,420	\$377.72	6,540	\$262.46
City of Redding	6,140	5,610	\$130.84	3,900	\$90.91
SCWA ²	5,000	4,570	\$148.65	3,180	\$103.29
MGCSD	350	320	\$6.76	220	\$4.70
KCSA	500	460	\$11.86	320	\$8.24
SCSD	1,000	910	\$21.33	640	\$14.82
City of Shasta Lake	2,750 4,400	2,510	\$64.92	1,750	\$45.11
USFS	10	10	\$0.29	10	\$0.20
Total	55,050 56,700	30,210	\$1,100.30	21,000	\$764.56

Source: CH2M Hill 1999, Dornbusch & Company 2000

¹ Consistent with CVPIA PEIS analysis, figures are based on 1994 M&I rates and include restoration charge of \$12.00 per acre-foot.

² Includes CCSD.

Alternative 2

Table 4.3-14 presents the 1999 “theoretical” tiered rates for CVP M&I water that Shasta and Trinity River Division Contractors would have paid had the 1999 published rates been revised based on the rate-setting methodology proposed under Alternative 2. For comparison, the table also shows the actual published 1999 M&I cost-of-service rate for each district. The table reveals a potentially large escalation of CVP M&I rates under Alternative 2. For example, the table shows that CCCSD cost-of-service rate in 1999 would have been over three times higher than under the No Action Alternative (\$137.59 per acre-foot compared to \$42.01 per acre foot). The differences are not as large for the other districts, ranging from no difference in the case of some of the City of Redding’s CVP supply to almost 50 percent for KCSA. It should be noted that these rate comparisons account for the potential additional impacts on rates of the Category 1/Category 2 rate-setting measure also stipulated under Alternative 2, which would not be implemented under the No Action Alternative.

Table 4.3-15 presents the maximum incremental impact of Alternative 2 (at contract year 25) on the cost of M&I contract water for each of the potentially affected M&I Contractors under average and dry hydrologic conditions. The table indicates that the total annual cost of untreated CVP M&I water for the Shasta and Trinity River Divisions under average hydrologic conditions could increase by as much as \$1.8 million dollars over the baseline cost of that water under the No Action Alternative (in 1999 dollars).

The table also reveals that CCCSD would experience the greatest M&I water cost impact, a three-fold increase in its cost of CVP M&I contract water under average conditions when compared to the No Action Alternative.

**TABLE 4.3-14
1999 PUBLISHED AND “THEORETICAL” COST-OF-SERVICE M&I RATES
ASSUMING 80-10-10 TIERED PRICING**

	No Action Alternative 1999 CVP M&I Rates	Alternative 2 “Theoretical” 1999 CVP M&I Rates		
	Cost-of-Service Rate (\$/acre-foot)	Cost-of-Service Rate (\$/acre-foot)	Midpoint ¹ (\$/acre-foot)	Full-Cost Rate (\$/acre-foot)
CVP Contractor	1 st Tier (80%)	1 st Tier (80%)	2 nd Tier (10%)	3 rd Tier (10%)
BVWD	\$57.62	\$74.37	\$85.13	\$95.89
CCCSD	\$42.01	\$137.59	\$165.41	\$193.22
City of Redding ²	\$15.00-\$21.77	\$15.00-\$23.41	\$15.00-\$27.25	\$15.00-\$31.08
SCWA ³	\$29.77	\$37.78	\$43.22	\$48.66
MGCSD	\$17.38	\$17.72	\$19.88	\$22.03
KCSA	\$23.60	\$35.09	\$41.90	\$48.71
SCSD	\$20.37	\$24.57	\$28.90	\$33.23
City of Shasta Lake	\$15.00	\$15.00	\$15.00	\$15.00
USFS	\$15.00	\$16.30	\$17.84	\$19.37

Source: Bureau of Reclamation 1999a, Dornbusch & Company 2000

1 Midpoint estimated as the simple average of the cost-of-service and full-cost rates.

2 City of Redding pays a range of prices on its CVP M&I water since the water is delivered through different facilities.

3 Includes CCSD

**TABLE 4.3-15
YEAR 2029 IMPACTS ON CVP UNTREATED M&I WATER COST UNDER
AVERAGE AND DRY HYDROLOGIC CONDITIONS**

Contractor	No Action Alternative	Alternative 2 Incremental Change from No Action Alternative	No Action Alternative	Alternative 2 Incremental Change from No Action Alternative
	Average Condition (\$000s) ¹	Maximum Impact - Average Condition (\$000s) ²	Dry Condition (\$000s) ¹	Maximum Impact - Dry Condition (\$000s) ²
BVWD	\$337.94	\$280.87	\$234.82	\$170.34
CCCSD	\$377.72	\$1,259.72	\$262.46	\$780.91
City of Redding	\$130.84	\$88.14	\$90.91	\$53.85
SCWA ³	\$148.65	\$106.16	\$103.29	\$64.80
MGCSD	\$6.76	\$3.79	\$4.70	\$2.39
KCSA	\$11.86	\$12.91	\$8.24	\$7.85
SCSD	\$21.33	\$16.72	\$14.82	\$10.19
City of Shasta Lake	\$64.92	\$6.74	\$45.11	\$4.68
USFS	\$0.29	\$(0.01)	\$0.20	\$(0.01)
Total	\$1,100.30	\$1,769.17	\$764.56	\$1,095.00

Source: CH2M Hill 1999, Bureau of Reclamation 1999a, and Dornbusch & Company 2000

1 Based on 1994 published rates and \$12 dollar restoration charge, since the most currently available analysis of M&I water cost impacts is based on 1994 rates.

2 Based on 1999 revised rates and a \$13.50 dollar restoration charge.

3 Includes CCSD.

4.3 Socioeconomics

The anticipated water cost increases presented in the table would be passed directly onto individual customers of the affected districts. However, the percentage increases in residential water bills would be much smaller than the percentage increase in the Contractors' cost of untreated CVP water, since the cost of the untreated water is only a small part of an individual's total residential M&I water bill. Nonetheless, any increase in residential water rates could have a noticeable impact on individuals and families with limited income and ability to pay more for their water, given the small changes over the preceding 40 years.

Agricultural Water Costs, Land Use, and Economics

No Action Alternative

Table 4.3-16 presents the 1999 published cost of service and full-cost agricultural water rates for BVWD and CCCSD. The table reveals a greater disparity in the BVWD cost-of-service rate and full-cost rate than for CCCSD. Unlike the assessment of the impacts of contract renewal on CVP M&I water cost, the assessment of the impacts on the cost of CVP agricultural water under the No Action Alternative is based on 1999 rates because the PEIS agricultural economic analysis was updated to 1999.

**TABLE 4.3-16
ESTIMATED 1999 AGRICULTURAL WATER RATES UNDER 80-10-10 TIERED PRICING,
TWO SHASTA AND TRINITY TRIVER CONTRACTORS**

CVP Contractor	Cost-of-Service Rate	Midpoint	Full-Cost Rate
	1 st Tier (80%)	2 nd Tier (10%)	3 rd Tier (10%)
BVWD	\$22.89	\$38.105	\$53.32
CCCSD	\$18.21	\$25.21	\$32.20

Source: Bureau of Reclamation 1999b, Dornbusch & Company 2000

Table 4.3-17 presents the anticipated contract year 25 (2029) Gross Value of Production, CVP agricultural water use, and amount of irrigated land in the BVWD and CCCSD service areas under the No Action Alternative. The table reveals that BVWD irrigators are projected to use two times more CVP water than CCCSD irrigators on only about 25 percent more land. This disparity in water use can be explained by the fact that a greater proportion of the BVWD cropping pattern is projected to be pasture, a water intensive crop.

**TABLE 4.3-17
YEAR 2029-GROSS VALUE OF PRODUCTION-CVP AGRICULTURAL WATER USE AND IRRIGATED LANDS
NO ACTION ALTERNATIVE-BVWD AND CCCSD**

Factor (Based on 1999 Dollars)	BVWD		CCCSD	
	No Action Alternative (Average Condition)	No Action Alternative (Dry Condition)	No Action Alternative (Average Condition)	No Action Alternative (Dry Condition)
Gross Value of Production (Million\$)	\$1.95	\$1.95	\$4.58	\$4.58
CVP Water Use (in acre-feet)	13,500	14,690 ¹	5,800	6,310 ¹
Irrigated Lands (in acres)	5,960	5,890	4,690	4,640

Source: CH2M Hill 2000, Dornbusch & Company 2000

¹ CVP water use increases in a dry year relative to an average year to offset anticipated reduction in ground-water pumping in dry years.

Alternative 1

Alternative 1 is assumed to have effects on agricultural water costs and associated land and water use, gross value of production, and farm net revenues for the affected water districts similar to the No Action Alternative. Therefore, there would be no incremental effects on these elements compared to the No-Action Alternative as a result of this alternative.

Alternative 2

Table 4.3-18 presents the “theoretical” 1999 tiered rates for CVP agricultural water for BVWD and CCCSD had the 1999 published rates been revised based on the rate-setting methodology proposed under Alternative 2. For comparison, the table also shows the actual published 1999 agricultural cost-of-service rate for each district (No Action). The table shows that the impact of Alternative 2 on CCCSD CVP agricultural cost-of-service water rates (about 20 percent) would be much lower than the impact on its CVP M&I cost-of-service water rates. At the same time, Alternative 2 would cause BVWD CVP agricultural water cost-of-service rate to increase by about 45 percent from the cost under the No Action Alternative. It should be noted that these rate comparisons account for the potential additional impacts on rates of the Category 1/Category 2 rate-setting measure also stipulated under Alternative 2, and that would not be implemented under the No Action Alternative.

**TABLE 4.3-18
 1999 PUBLISHED AND “THEORETICAL” COST-OF-SERVICE AGRICULTURAL RATES
 ASSUMING 80-10-10 TIERED PRICING**

Water District	No Action Alternative 1999 CVP Agricultural Water Rates	Alternative 2 “Theoretical”1999 CVP Agricultural Water Rates		
	Cost-of-Service (\$/acre-foot)	Cost-of-Service Rate (\$/acre-foot)	Midpoint ¹ (\$/acre-foot)	Full-Cost Rate (\$/acre-foot)
CVP Contractor	1 st Tier (80 percent)	1 st Tier (80 percent)	2 nd Tier (10 percent)	3 rd Tier (10 percent)
BVWD	\$22.89	\$32.02	\$53.85	\$75.67
CCCSD	\$18.21	\$21.68	\$30.17	\$38.66

Source: Bureau of Reclamation 1999b, Dornbusch & Company 2000

¹ Midpoint estimated as the simple average of the cost-of-service and full-cost rates.

Tables 4.3-19 and 4.3-20 present the estimated potential maximum incremental water cost and land use impacts under Alternative 2 for BVWD and CCCSD, respectively. Table 4.3-19 indicates that implementation of Alternative 2 could cause as much as 800 acres of BVWD irrigated pastureland in the projected contract year 25 to be fallowed during a year of average hydrologic conditions (and even more under dry hydrologic conditions). The table also shows that in contract year 25 (2029), assuming average hydrologic conditions, BVWD farmers may reduce their use of CVP agricultural water by as much as 7,550 acre-feet, or more than half their 13,500 acre-feet of projected use under the No Action Alternative. The fallowing of land and the reduction in the amount of water applied to lands that would remain under irrigation under Alternative 2 could reduce the annual gross value of agricultural production within the BVWD by approximately 6 percent (or \$120,000 in 1999 dollars) and the net income realized by farmers by as much as \$130,000 in 1999 dollars under average hydrologic conditions. In a dry year, the decline in gross production value and net revenue impacts could climb to \$180,000 and \$260,000 (in 1999 dollars)

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respectively. The projected maximum agricultural land and water use, gross value of production, and net revenue impacts for CCCSD under Alternative 2 are presented in Table 4.3-20.

**TABLE 4.3-19
PROJECTED YEAR 2029 AGRICULTURAL ECONOMIC AND LAND USE IMPACTS,
BELLA VISTA WATER DISTRICT**

Factor (Based on 1999 Dollars)	No Action Alternative	Alternative 2 Maximum Incremental Change from No Action Alternative	No Action Alternative	Alternative 2 Maximum Incremental Change from No Action Alternative
	Average Hydrologic Condition	Average Hydrologic Condition	Dry Hydrologic Condition	Dry Hydrologic Condition
Gross Value of Production (Million\$)	\$1.95	(\$0.12)	\$1.95	(\$0.18)
Fallowed Land	(\$0.06)			(\$0.06)
Groundwater Pumping	0.00			(0.06)
Irrigation Cost	0.14			0.14
CVP Untreated Water Cost	(0.21)			(0.28)
Crop Prices	0.00			0.00
Net Revenue Impact	(\$0.13)			(\$0.26)
Projected Year 2020				
CVP Water Use (acre-feet)	13.50	(7.55)	14.69	(9.44)
Irrigated Land (acres)	5,960	(800) ¹	5,890	(1,160) ¹

Source: CH2M Hill 2000, Bureau of Reclamation 1996, Dornbusch & Company 2000

¹ Projected to be almost entirely pasture.

**TABLE 4.3-20
PROJECTED YEAR 2029 AGRICULTURAL ECONOMIC AND LAND USE IMPACTS,
CLEAR CREEK COMMUNITY SERVICES DISTRICT**

Factor (Based on 1999 Dollars)	No Action Alternative	Alternative 2 Maximum Incremental Change from No Action Alternative	No Action Alternative	Alternative 2 Maximum Incremental Change from No Action Alternative
	Average Hydrologic Condition	Average Hydrologic Condition	Dry Hydrologic Condition	Dry Hydrologic Condition
Gross Value of Production (Million\$)	\$4.58	(\$0.08)	\$4.58	(\$0.12)
Fallowed Land	(\$0.04)			(\$0.04)
Groundwater Pumping	0.00			(0.04)
Irrigation Cost	0.06			0.06
CVP Untreated Water Cost	(0.09)			(0.19)
Crop Prices	0.00			0.00
Net Revenue Impact	(\$0.07)			(\$0.14)
Projected Year 2020				
CVP Water Use (Acre-feet)	5.80	(3.25)	6.31	(4.06)
Irrigated Land (acres)	4,690	(510) ¹	4,640	(740) ¹

Source: CH2M Hill 2000, Bureau of Reclamation 1996, Dornbusch & Company 2000

¹ Projected to be almost entirely pasture.

4.3.4 CUMULATIVE EFFECTS ON THE REGIONAL ECONOMY

No Action Alternative

Table 4.3-21 summarizes projected year 2029 industrial output, employment in terms of full-time equivalent jobs (FTE), and income by place of work (POW) for Shasta County under the No Action Alternative. Consistent with the PEIS, the figures are presented in 1991 dollar terms.

**TABLE 4.3-21
 ESTIMATED YEAR 2029 OUTPUT, EMPLOYMENT, AND INCOME BY PLACE-OF-WORK, SHASTA COUNTY
 (1991 DOLLARS)**

Industrial Sector	Output (Million\$)	Employment (FTE Jobs)	Income POW (Million\$)
Agriculture	\$131.01	2,341	\$61.21
Mining	\$497.41	272	\$419.96
Construction	\$604.27	6,746	\$200.61
Manufacturing	\$684.30	5,270	\$258.51
Transportation	\$478.04	4,115	\$246.69
Trade	\$583.29	16,584	\$334.53
Fire	\$594.89	6,100	\$373.84
Services	\$808.69	18,751	\$469.00
Government	\$360.44	11,404	\$331.23
Total	\$4,742.35	71,579	\$2,695.62

Source: Minnesota Implan Group 1994; Dornbusch & Company 2000.

Alternative 1

Alternative 1 is assumed to have effects on output, employment, and income in Shasta County similar to the No Action Alternative. Therefore, there would be no incremental effects on these elements under Alternative 1.

Alternative 2

Table 4.3-22 summarizes the contract year 25 (2029) sector-specific and total anticipated maximum incremental impacts on industrial output within Shasta County under Alternative 2. These impacts would result from the escalation of CVP M&I water rates as well as increased CVP agricultural water rates and acreage limitations and the associated changes in land use, farmer net income, and gross value of agricultural production. The table indicates that if Alternative 2 were implemented, the county’s total industrial output could decrease by as much as \$3.3 million in 1991 dollars when compared to baseline No Action levels (less than 0.1 percent). The table also shows that the impacts on the county’s agricultural sector would be larger, at approximately negative 0.2 percent.

**TABLE 4.3-22
 YEAR 2029 SHASTA COUNTY OUTPUT IMPACTS UNDER ALTERNATIVE 2
 (1991 COMPARATIVE BASIS)**

Industrial Sector	No Action Alternative	Alternative 2	
	Average Condition (Millions\$)	Incremental Change from No Action Maximum (Millions\$)	Incremental Change from No Action Maximum (%)
Agriculture	\$131.01	-0.28	-0.21%
Mining	497.41	-0.04	-0.01%
Construction	604.27	-0.04	-0.01%
Manufacturing	684.30	-0.59	-0.09%
Transportation	478.04	-0.30	-0.06%
Trade	583.29	-0.53	-0.09%
Finance, Insurance & Real Estate	594.89	-0.62	-0.10%
Services	808.69	-0.81	-0.10%
Government	360.44	-0.10	-0.03%
Total	\$4,742.35	-3.31	-0.07%

Sources: Minnesota Implan Group 1994, Dornbusch & Company 2000.

Table 4.3-23 summarizes the contract year 25 (2029) sector-specific and total anticipated maximum incremental impacts on employment Shasta County under Alternative 2. The table indicates that the county’s agricultural employment could decrease by about 5 jobs, or 0.2 percent from baseline No Action levels under Alternative 2. Overall, the county economy could see a decrease of as many as 46 jobs if Alternative 2 is implemented.

**TABLE 4.3-23
 YEAR 2029 SHASTA COUNTY EMPLOYMENT IMPACTS UNDER ALTERNATIVE 2
 (1991 COMPARATIVE BASIS)**

Industrial Sector	No Action Alternative	Alternative 2	
	Average Condition (FTE Jobs)	Incremental Change from No Action Maximum (FTE Jobs)	Incremental Change from No Action Maximum (%)
Agriculture	2,341	-5.3	-0.23%
Mining	272	0.0	0.00%
Construction	6,746	-0.6	-0.01%
Manufacturing	5,270	-2.4	-0.05%
Transportation	4,115	-2.1	-0.05%
Trade	16,584	-11.9	-0.07%
Finance, Insurance & Real Estate	6,100	-5.4	-0.09%
Services	18,751	-17.9	-0.10%
Government	11,404	-0.7	-0.01%
Total	71,579	-46.3	-0.06%

Source: Minnesota Implan Group 1994, Dornbusch & Company 2000.

Table 4.3-24 summarizes the contract year 25 (2029) sector-specific and total anticipated maximum incremental impacts on income by POW within Shasta County under Alternative 2. The table indicates

that the region's income by POW could decrease by almost \$1.9 million or 0.7 percent from baseline No Action levels under Alternative 2 (in 1991 dollar terms).

**TABLE 4.3-24
 YEAR 2029 IMPACTS ON SHASTA COUNTY INCOME BY PLACE OF WORK UNDER ALTERNATIVE 2
 (1991 COMPARATIVE BASIS)**

Industrial Sector	No Action Alternative	Alternative 2	
	Average Condition (Million\$)	Incremental Change from No Action Maximum (Million\$)	Incremental Change from No Action Maximum (%)
Agriculture	\$61.21	-\$0.19	-0.31%
Mining	419.96	-0.03	-0.01%
Construction	200.61	-0.01	0.00%
Manufacturing	258.51	-0.22	-0.09%
Transportation	246.69	-0.15	-0.06%
Trade	334.53	-0.30	-0.09%
Finance, Insurance, and Real Estate	373.84	-0.39	-0.10%
Services	469.00	-0.47	-0.10%
Government	331.23	-0.09	-0.03%
Total	\$2,695.62	-\$1.87	-0.07%

Sources: Minnesota Implan Group 1994; Dornbusch & Company 2000.

Table 4.3-25 summarizes the anticipated land use, water cost, and economic impacts of Alternative 1 for the Shasta and Trinity River Division Contractors. These impacts would have subsequent regional economic impacts within Shasta County, as presented in Tables 4.3-21 through 4.3-24 above.

**TABLE 4.3-25
 LAND USE, WATER COST, AND
 AGRICULTURAL ECONOMIC IMPACTS SUMMARY
 AVERAGE HYDROLOGIC CONDITION**

Factor	No Action Alternative	Incremental Change From No-Action Conditions	
		Alternative 1	Alternative 2 Maximum Impact
CVP M&I Water Cost (\$000s)	\$1,100	No Change	\$1,769
Irrigated Land Use (000s acres)	10.65	No Change	(1.3)
Gross Value of Production (Millions \$)	\$6.53	No Change	(\$0.2)
Net Value of Production (Millions \$)	N/A	No Change	(\$0.2)
Annual CVP M&I Water Use Affected by Contract Renewal (acre-feet)	30.22	No Change	No Change
Annual CVP M&I Water Use Affected by Contract Renewal (acre-feet)	19.1	No Change	(10.8)

Source: Dornbusch & Company 2000

4.4 LAND USE

4.4.1 AFFECTED ENVIRONMENT

This characterization of the affected environment for land use is based on information provided in Shasta County Water Resources Master Plan Phase 1 Report – Current and Future Water Needs (October 1997). This analysis was prepared by SCWA in partnership with CH2M Hill. The California Department of Water Resources (DWR) provided land use information (collected in 1995) that is the basis for the acreages presented in this report. More than 90 percent of the Contractor service areas (i.e., boundaries of the Shasta and Trinity River Divisions) are included within the 260,000-acre Redding Groundwater Basin. Land use data are presented for the Redding Groundwater Basin as a whole (these data are not segregated by individual Contractors). Acreages reported for the Redding Groundwater Basin include areas that are outside the Contractor service areas and that have a higher percentage of farmland than the Contractor service areas, but are otherwise similar.

- City of Redding Draft Background Report (July 1998). This analysis was prepared by the City of Redding and various consultants, and contains land use information for the sphere of influence considered by the City of Redding in updating its General Plan.
- City of Redding Public Hearing Draft General Plan (March 2000), prepared by the City of Redding.
- Shasta County General Plan, as amended through October 1998, prepared by the Shasta County Department of Resource Management.
- City of Shasta Lake Existing Conditions Report (February 1999), prepared by the City of Shasta Lake.
- Bella Vista Water District Water Conservation Plan (January 1995), prepared by the BVWD. Supplemental information provided by the district in informal correspondence (November 1999 “Draft”) also was incorporated.
- Clear Creek Community Services District Water Conservation Plan (November 1994), prepared by the CCCSD. Supplemental information provided by the district in informal correspondence (Water Conservation Plan Demand Analysis, Attachments 2 and B, dated March 19, 1999) also was incorporated.
- City of Shasta Lake Water Conservation Plan (March 1994), prepared by the City of Shasta Lake.
- City of Redding Water Conservation Plan (undated, assume 1994), prepared by the City of Redding.

Existing Land Uses

Existing land uses in Shasta County and the Redding Groundwater Basin are shown in Table 4.4-1. As shown, Shasta County encompasses approximately 2.5 million acres. Approximately 6 percent of the

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county land base consists of water-using land. Approximately 2 two percent of the total land base is urban/rural urban (water-and non-water using combined). In the Redding Groundwater Basin, where development is more concentrated, approximately 21 percent is water-using land, and 18 percent is urban/rural urban (water- and non-water using combined). The remaining lands are non-water use lands that are in native vegetation or “idle” status. The predominant agricultural water use in both Shasta County and in the Redding Groundwater Basin is pasture irrigation. Non-water use areas are divided into three subcategories: native, idle, and rural urban non-irrigated (1 to 5 acres).

**TABLE 4.4-1
SHASTA COUNTY AND REDDING GROUNDWATER BASIN LAND USES (ACRES)**

Category	Shasta County	Redding Basin
Water-Using Lands – Irrigated Agriculture		
Permanent Crops	2,960	2,487
Grain Field Crops	5,308	1,572
Pasture	48,998	16,187
Truck	989	337
Rice	2,941	0
Rural Urban (1 to 5 acres)	2,672	2,672
Total	63,868	23,255
Urban		
Urban	26,945	18,224
Rural Urban Domestic (1 to 5 acres)	5,375	4,632
Total	32,320	22,856
Commercial and Industrial		
Commercial	2,066	1,326
Industrial	3,556	2,844
Total	5,622	4,170
Recreation and Environmental		
Water Bodies	43,051	1,696
Parks and Golf Courses	714	490
Riparian Vegetation	5,467	2,799
Total	49,232	4,985
Total Water Use Areas	151,042	55,266
Non-Water Use Lands		
Native	2,277,486	178,836
Idle	11,031	1,886
Rural Urban Non-Irrigated (1 to 5 acres)	27,777	23,571
Total Non-Water Use Areas	2,316,294	204,293
Gross Land Use Area	2,467,336	259,559

Countywide, approximately 0.2 percent of the land base is used for commercial and industrial purposes, 0.2 percent is used for recreation and environmental purposes, and 3 percent is irrigated agriculture. The predominant water-using land use in Shasta County is agriculture. Ninety-three percent of the land base in Shasta County is classified as non-water use land.

The Redding Groundwater Basin accounts for approximately 11 percent of the total Shasta County land base. About 2 percent of the Redding Groundwater Basin is commercial and industrial, approximately 0.2 percent is used for recreation and environmental purposes, and nearly 3 percent is irrigated agriculture. Urban/rural urban development is proportionately the most significant land use in the Redding Groundwater Basin. Nearly 70 percent of the land base in the Redding Groundwater Basin is non-water using land.

Urban development is concentrated in the south central portion of the county in the cities of Redding, Anderson, and Shasta Lake. Approximately 84 percent of the populous of Shasta County resides in these communities (Shasta County General Plan 1998). All of these areas receive Shasta and Trinity River Project water supplies except Anderson. The City of Anderson is not affected by the scope of this document and is therefore not specifically addressed.

**TABLE 4.4-2
 EXISTING LAND USE DESIGNATIONS
 CITY OF REDDING AND CITY OF SHASTA LAKE (Acres)**

Land Use Designation	City of Redding*	City of Shasta Lake
Residential	35,559	5,151
Retail	1,414	71
Service Commercial	1,143	NA
Highway Commercial	239	NA
Office	607	NA
Office Residential	168	NA
Commercial**	NA	340
Industrial	4,484	848
Airport Service	1,215	NA
Mineral Resources	NA	26
Park	1,342	128
Public Facility/Institution	1,895	178
Greenway	15,156	NA
Agriculture	631	NA
Federal Government	NA	201
TOTAL	63,490	6,943

Source: City of Redding Draft Background Report (1998); City of Shasta Lake General Plan Existing Conditions Report (1999)

* Redding General Plan Area (not city limits)

** City of Shasta Lake does not differentiate commercial acreage use.

The BVWD encompasses 34,016 acres (53.2 square miles), with service provided to 4,776 connections. Of these connections, 534 receive water for agricultural use. Also of these 4,776 total connections, 4,608 are serviced by meters that are suited to typical residential lots (i.e., 3/4-inch) or mid-sized acreage (i.e., 1-5 acres). There were 30 full time farms operating in 1997. Water for agricultural use is delivered to 6,151 acres of land. Of this total, 3,550 acres are irrigated (includes aquaculture). Most of the irrigated land is cropped to pasture (2,813 acres, 79 percent of total irrigated land). Grains, alfalfa and fruits account for 880 irrigated acres (25 percent of total irrigated land) (data inconsistency noted).

During the last 10 to 12 years, there has been a general trend toward lower crop production and an increase in the acreage of irrigated pasture in the BVWD. The acreage planted in fruits and nuts has steadily declined, while oat, alfalfa, and nut production has been variable. The cumulative total water consumption by residential, commercial, and rural users (defined by the BVWD to be users that irrigate in larger than residential quantities of water, with the irrigated area typically being less than 2 acres, that

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do not meet Federal requirements for agricultural water use) has increased from 16 percent of the total 1988 consumption to 40 percent of the total 1997 consumption.

During the period from 1988 to 1993, M&I water consumption in the BVWD increased by approximately 130 percent, from 2,261 acre-feet per year to 5,219 acre-feet per year. Agricultural water consumption during the same time period decreased by almost 60 percent, from 11,628 acre-feet per year to 6,652 acre-feet per year. In 1989, the number of M&I connections was 2,493, and in 1993 there were 3,684 connections. This represents a 43 percent increase between 1989 and 1993. This shift in cropping pattern and water consumption away from agricultural uses and toward residential, commercial, and rural uses is attributable to urbanization of the westerly portion of the BVWD, which is within the sphere of influence of the city of Redding.

The CCCSD encompasses 14,314 acres (22.4 square miles) with service provided to 2,498 connections. Of these connections, 788 receive water for agricultural use, and 1,551 are connections that provide water for M&I use. Water for agricultural irrigation (including aquaculture) is delivered to approximately 4,470 acres (data for 1989, provided March 19, 1999). Most of the irrigated land is cropped to pasture (2,161 acres, 48 percent of total agricultural irrigated land). Other irrigated crops (e.g., deciduous orchards, alfalfa, firewood/Christmas trees, miscellaneous field crops, etc.) account for 2,309 irrigated acres (52 percent of total agricultural irrigated land). About 2,640 acres of land that is capable of receiving water for agricultural use was not under a crop rotation (i.e., was fallow) in 1989.

The City of Shasta Lake encompasses 7,024 acres (11 square miles) with service provided to 3,773 connections. All of the service connections are for M&I uses, and there are no agricultural land uses within the Contractor service area.

The City of Redding encompasses 59,044 acres, with service provided to 24,889 connections. The City delivers water obtained under the CVP contract throughout the “Buckeye zone” service area, which includes about 4,237 connections. Most of these connections are within the city limits (included within the above-referenced 22,704 connections city-wide), but a few of the connections that receive water under the CVP contract are outside the city limits. All of the City of Redding deliveries of CVP water are for M&I uses, although the City’s General Plan designates 631 acres as agriculture.

Additional historical land and water usage data specific to other Contractors were not available, except as previously described.

Projected Future Land Use

The cities of Redding and Shasta Lake, and Shasta County have each adopted General Plans to guide future development and land uses within their respective spheres of influence. As indicated in each of the plans, projected population growth trends are expected to continue at approximately 1.5 percent to 2.2 percent per year, based on historic and predicted conditions.

The City of Redding projects a 21 percent increase in single- and multiple-family dwellings between the years 2000 and 2010, or 2.1 percent per year. The number of acres required to support housing development during these years is projected to increase by 21 percent, from 902 acres per year at present to 1,092 acres per year in 2010.

The acreage of agricultural land use the CCCSD is projected to increase by 45 percent (from 7,110 acres to 10,325 acres) during the period 1989 through 2026 (Water Conservation Plan Demand Analysis, Attachments 2 and B, dated March 19, 1999). Acreages for all crops except miscellaneous field crops and nursery/lettuce are anticipated to increase. Anticipated increases range from 10 percent (alfalfa) to 300 percent (subtropical orchards). The acreage of irrigated pasture is anticipated to increase by 120 percent, from 2,161 acres (1989) to 4,500 acres (2025). During this period, the acreage of fallow land is projected to increase by 12 percent, from 2,640 acres to 2,950 acres.

Additional projections of future land and water usage specific to other Contractors were not available, except as previously described.

4.4.2 ENVIRONMENTAL CONSEQUENCES

No Action Alternative

Because renewal of the long-term contracts would not involve the construction of any physical facilities and structures, the No Action Alternative would not have a direct effect on land use. Additionally, implementation of the No Action Alternative would not conflict with any adopted land use plan. The No Action Alternative would also not cause indirect effects on M&I land use.

Indirect economic effects on agricultural land use could occur under the No Action Alternative due to rewording to provide water service to parcels that are less than or equal to 5 acres as M&I water instead of agricultural water. Under the rewording, Reclamation's Contracting Officer would seek verification that the use is agricultural. Two Contractors in the Division are designated to receive CVP agricultural water (i.e., BVWD and CCCSD). If the use is determined to be agricultural on parcels less than or equal to 5 acres, there would be no indirect effect of the No Action Alternative. Indirect effects, such as reduced agricultural production, could occur if the 2- to 5-acre tracts are currently inappropriately designated as agricultural.

In 1996, a total of 7,319 acres of land within the two districts that are designated for CVP agricultural water use were irrigated with CVP water: 3,388 acres in the BVWD and 3,931 acres in the CCCSD. Under the No Action Alternative for the BVWD, the irrigated acreage is assumed to increase to 5,960 acres and 5,890 acres for the average and dry conditions, respectively. Under the No Action Alternative for the CCCSD, the irrigated acreage is assumed to increase to 4,690 acres and 4,640 acres for the average and dry conditions, respectively. (See also Table 4.3-17.)

Alternative 1

Alternative 1 is assumed to have direct and indirect effects on land use similar to those of the No Action Alternative. There would be no incremental environmental effects on land use under this alternative.

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Alternative 2

Alternative 2 is assumed to have direct effects on land use similar to those of the No Action Alternative. There would be no incremental direct environmental effects on land use under this alternative.

Regarding indirect effects, implementation of Alternative 2 could cause a slight retraction of the regional economy and a consequent effect on M&I land use. A retraction of the regional economy would be expected to delay implementation or reduce the scale of land uses that rely on M&I water deliveries. Regional economic impacts would be small compared to the normal inter-year variation, so impacts on non-agricultural land uses are expected to be small. Otherwise, Alternative 2 is assumed to have indirect effects on M&I land use similar to those of the No Action Alternative. There are no other incremental indirect effects on M&I land use under this alternative.

Under Alternative 2, indirect effects on agricultural land use due to rewording to provide water service to parcels that are less than or equal to 5 acres as M&I water instead of as irrigation water are assumed to be similar to those anticipated under the No Action Alternative. There would be no incremental indirect effects due to rewording under this alternative if 2 to 5 acre tracts now receiving agricultural rates are truly used for agriculture, as those tracts would continue to qualify for agricultural rates.

Nonetheless, for Contractors that deliver agricultural water (i.e., BVWD and CCCSD), the increase in agricultural rates could cause fallowing of lands with implementation of Alternative 2 relative to the No Action Alternative. Almost all of the additional fallowed lands are projected to be taken out of pasture. The incremental acreages that may be fallowed in 2029 under Alternative 2 versus the No Action Alternative are presented for the BVWD (average and dry conditions) in Table 4.3-19. These projections are presented for the CCCSD in Table 4.3-20.

As shown in Table 4.3-19, for the BVWD, implementation of Alternative 2, with its increases in agricultural rates, could result in increased fallowing (relative to the No Action Alternative) of about 800 acres in 2029 under average conditions and could result in increased fallowing of about 1,160 acres under dry conditions. These values represent 13 percent and 20 percent reductions, respectively, in the irrigated acreages that are assumed to occur relative to the No Action Alternative under average and dry conditions.

As shown in Table 4.3-20, for the CCCSD, implementation of Alternative 2, with its increases in agricultural rates, could result in increased fallowing (relative to the No Action Alternative) of about 510 acres in 2029 under average conditions and could result in increased fallowing of about 740 acres under dry conditions. These values represent 11 percent and 16 percent reductions, respectively, in the irrigated acreages that are assumed to occur relative to the No Action Alternative under average and dry conditions. In other words, a shift from agricultural to M&I rates will have no effect if 2- to 5-acre parcels are really agricultural, but the increase in agricultural rates will have an effect.

4.4.3 CUMULATIVE EFFECTS

Cumulative effects to land use would occur in the form of increased fallowing. Almost all of the additional fallowed lands would be taken out of pasture. For the BVWD, about 1,160 additional acres could be fallowed in 2029 under dry conditions under Alternative 2 versus the No Action Alternative, as

shown in Table 4.3-19. For CCCSD, fallowing could occur on about 740 acres under dry conditions as shown in Table 4.3-20. Of the 38,998 acres of pasture in Shasta County, these fallowed areas represent less than 5 percent of pasture in Shasta County. Therefore, implementation of either Alternative 1 or 2 would result in only minor changes to land use.

4.5 BIOLOGICAL RESOURCES

4.5.1 AFFECTED ENVIRONMENT

This characterization of the affected environment for biological resources is based on information provided in *the Biological Assessment/Essential Fish Habitat Assessment for the Shasta and Trinity River Divisions Long-Term Contract Renewal (August 2003)*, including:

- California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California. This comprehensive database maintained by the California Native Plant Society contains statewide sighting records of special-status plant species.
- California Department of Fish and Game Natural Diversity Database (Rarefind) Version 2.1.2c. (2003). This state-maintained database provides statewide sighting information for special-status wildlife species.
- The U.S. Fish and Wildlife Service (USFWS) list of Endangered and Threatened Species That May Occur in or Be Affected by Projects in Shasta County (USFWS 2000a; Reference File No. 00-SP-2414). This list was updated on June 27, 2003 (<http://sacramento.fws.gov>).
- California Department of Fish and Game's Endangered and Threatened Animals of California (CDFG 2002b) and State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFG 2002a). These comprehensive statewide lists of special-status species were consulted to determine which species would potentially occur in Shasta County.
- City of Redding Draft Background Report (July 1998). This analysis was prepared by the City of Redding and various consultants, and contains information regarding existing habitat classifications and special-status plant and wildlife species.
- City of Shasta Lake General Plan Existing Conditions Report (February 1999). This analysis, prepared by Diaz Associates, provided information regarding existing habitat classifications and special-status plant and wildlife species.
- Bella Vista Water District Water Conservation Plan (January 1995), prepared by the BVWD. The plan was reviewed for special-status plant and wildlife information.
- City of Redding Water Conservation Plan (undated, assumed 1994), prepared by the City of Redding. The plan was reviewed for special-status plant and wildlife information.
- City of Shasta Lake Water Conservation Plan (March 1994), prepared by the City of Shasta Lake. The plan was reviewed for special-status plant and wildlife information.
- Clear Creek Community Services District Water Conservation Plan (November 1994), prepared by the CCCSD. The plan was reviewed for special-status plant and wildlife information.

Habitat Types and Communities Within the Shasta and Trinity River Divisions

The Redding Basin is a hydrologic subbasin of the Sacramento River Basin, as defined by the California Department of Water Resources (Shasta County Water Agency et al. 1997). More than 90 percent of the Study Area (i.e., within the boundaries of the Shasta and Trinity River Divisions) is included within the 260,000-acre Redding Basin. The Redding Basin supports a diverse range of vegetation types and numerous wildlife species, and there are vegetation and wildlife resources that could be affected by the proposed contract renewals.

Eleven habitat types occur within the Study Area:

- Annual grassland
- Blue oak/grey pine
- Blue oak woodland
- Cropland
- Lacustrine and other aquatic communities
- Riparian
- Ponderosa pine
- Klamath mixed conifer
- Sierran mixed conifer
- Vernal pool
- Urban

A description of each habitat type and associated wildlife species is provided in Table 4.5-1.

**Table 4.5-1
 Habitat Types and Communities Occurring within the
 Shasta and Trinity River Divisions**

Habitat Type	Characteristics
Annual Grassland (AGS)	Annual grassland habitat consists of open grasslands composed primarily of introduced annual grasses. Vernal pools often occur as inclusions within this habitat type. Cropland is commonly cultivated within this habitat type. Annual grasslands are distributed throughout the study area, often interspersed among oak woodlands. The seed crops produced in this habitat type are crucial for insects, birds, and grain-eating mammals, as well as species that prey upon them. Predators include coyote (<i>Canis latrans</i>), grey fox (<i>Urocyon cinereoargenteus</i>), hawks, white-tailed kite (<i>Elanus caeruleus</i>), and owls. This habitat is capable of supporting burrowing owls (<i>Athene cunicularia</i>) and other denning mammals. This is a favored habitat for mule deer. Special-status species associated with annual grasslands include American peregrine falcon and Swainson's hawk.
Blue Oak/Grey Pine (BOP)	This habitat is usually diverse in structure, with a mix of hardwoods, conifers, and shrubs. Within the project study area, the understory is primarily AGS. Blue oaks and grey pines dominate the overstory; blue oak is usually most abundant. Vernal pools often occur as inclusions in this habitat type. Cropland may be included within the AGS habitat component of this habitat type. The project area supports a combination of woodlands, including valley oak (<i>Quercus lobata</i>), blue oak (<i>Q. douglasii</i>), and blue oak/grey pine (<i>Pinus sabiniana</i>). Woodland types transition, as listed above, from valley floor to low foothills. Tree densities vary across the landscape. Woodland habitat is structurally complex and diverse, and important to a variety of wildlife species, particularly grey squirrel (<i>Sciurus carolinensis</i>), mule deer (<i>Odocoileus hemionus</i>), bats, California quail (<i>Callipepla californica</i>), and woodpeckers. Special-status species associated with woodland habitat include American peregrine falcon, northern spotted owl, and Shasta salamander (<i>Hydromantes shastae</i>).
Blue Oak Woodland (BOW)	Blue oak dominates this habitat type. Generally, these woodlands have an overstory of scattered trees, often forming open, savannah-like stands on dry ridges or gentle slopes. On certain sites, the canopy can be nearly closed. Vernal pools and annual grasslands commonly occur as inclusions within this habitat type. Cropland may be included within the AGS habitat component of this habitat type. Similar to BOP habitat, species common to blue oak woodlands include grey squirrel, mule deer, bats, California quail, and woodpeckers. Special-status species include American peregrine falcon and Shasta salamander.
Cropland (CRP)	Vegetation in this habitat type includes a variety of cultivated plants varying in size, shape, and growing patterns. Cropland habitats do not conform to normal habitat stages. Instead, cropland is regulated by the crop cycle in California. Cropland commonly occurs as an inclusion in AGS habitat, which in turn is commonly an inclusion in BOP and BOW habitats. These habitats may occur in association with irrigated pasture. Wildlife species that frequent agricultural areas vary with crop type and season, but may include red-winged blackbird (<i>Agelaius phoeniceus</i>), American crow (<i>Corvus brachyrhynchos</i>), black-tailed jack rabbit, California ground squirrel (<i>Spermophilus beecheyi</i>), burrowing owl, and various predators. Pasturelands are usually a mix of perennial grasses and legumes that normally provide 100 percent cover. Pheasant, quail, and red-winged blackbirds commonly nest in pasture habitat, or in brushy or lightly wooded pasture margins. Listed species associated with these habitat types include bald eagle, Swainson's hawk, and greater sandhill crane.

**Table 4.5-1
Habitat Types and Communities Occurring within the
Shasta and Trinity River Divisions**

Habitat Type	Characteristics
Lacustrine (LAC) and other aquatic communities	Aquatic communities include rivers, streams, lakes, and ponds. These communities provide important wildlife habitat for waterfowl, osprey (<i>Pandion haliaetus</i>), bald eagle, belted kingfisher (<i>Ceryle alcyon</i>), grebes, frogs, and northwestern pond turtles (<i>Clemmys marmorata marmorata</i>). Numerous species of insects reproduce and live in these communities, providing a significant prey base. Many predaceous birds and mammals forage in these communities and use river and stream corridors as travelways or for migration and dispersal. Special-status species associated with lacustrine and other aquatic habitats include bald eagle, American peregrine falcon, bank swallow, and California red-legged frog.
Riparian (RIP)	Riparian communities are found along watercourses in the area and are one of the most valuable habitats in California, providing food, cover, and nesting habitat, thermal refuge, and migration and dispersal corridors. Common associates include valley oak, California sycamore (<i>Platanus racemosa</i>), Fremont's cottonwood (<i>Populus fremontii</i>), willow (<i>Salix</i> sp.), and elderberry (<i>Sambucus</i> sp.). The study area has significant stands of Sacramento River riparian vegetation providing habitat for approximately 250 species of wildlife. Statewide, only 5 percent of the historical acreage of river riparian vegetation remains. Mammals commonly found in riparian areas include ringtail (<i>Basariscus astutus</i>), striped skunk (<i>Mephitis mephitis</i>), raccoon (<i>Procyon lotor</i>), and grey fox. Birds species found in riparian areas commonly include red-shouldered hawk (<i>Buteo lineatus</i>), wood duck (<i>Aix sponsa</i>), great blue heron (<i>Ardea herodias</i>), yellow warbler (<i>Dendroica petechia</i>), and black-crowned night heron (<i>Nycticorax nycticorax</i>). Amphibians such as Pacific tree frogs (<i>Pseudacris regilla</i>) and bullfrogs (<i>Rana catesbiana</i>) are commonly abundant. Reptiles include Pacific gopher snake (<i>Pituophis melanoleucus catenifer</i>) and garter snakes (<i>Thamnophis</i> sp.) Listed species associated with valley foothill riparian habitat include bald eagle, American peregrine falcon, western yellow-billed cuckoo, California red-legged frog, and valley elderberry longhorn beetle.
Ponderosa Pine (PPN)	At least 50% of a stand must be ponderosa pine to be classified ponderosa pine habitat. Within the project study area, the most common associated tree species include other conifers and various oak species. Shrubs such as manzanita and ceanothus, and various grasses and forbs are also common associates. Species commonly found in ponderosa pine habitat include mountain quail (<i>Oreortyx pictus</i>), sharp-shinned hawk (<i>Accipiter striatus</i>), red-tailed hawk (<i>Buteo jamaicensis</i>), long-eared owl (<i>Asio otus</i>), Virginia opossum (<i>Didelphis virginiana</i>), western spotted skunk (<i>Spilogale gracilis</i>), and black bear (<i>Ursus americanus</i>). Listed species associated with ponderosa pine habitat include bald eagle and American peregrine falcon.
Klamath mixed conifer (KMC)	Stands of Klamath mixed conifer habitat are typically tall, dense to moderately open and consist of a mixture of conifers. Dominant conifers typically include white fir (<i>Abies concolor</i>), Douglas-fir, ponderosa pine, incense cedar (<i>Calocedrus decurrens</i>), and sugar pine (<i>Pinus lambertiana</i>). Dense forests have a very rich shrub layer, which can include Sierra laurel (<i>Leucothoe davisiae</i>), Sadler oak (<i>Quercus sadleriana</i>), dwarf rose (<i>Rosa gymnocarpa</i>), and western thimbleberry (<i>Rubus parviflorus</i>). Species commonly found in Klamath mixed conifer habitat include mountain quail, sharp-shinned hawk, long-eared owl, western red bat (<i>Lasiurus blossevillii</i>), western gray squirrel, gray fox, and black bear. Listed species associated with Klamath mixed conifer habitat include northern spotted owl, American peregrine falcon, and California wolverine (<i>Gulo gulo</i>).
Sierran mixed conifer (SMC)	The Sierran mixed conifer habitat is an assemblage of conifer and hardwood species that form closed, multilayered canopies with nearly 100 percent overlapping cover. Dominant species include white fir, Douglas-fir, ponderosa pine, sugar pine, incense-cedar, and California black oak. Deerbrush (<i>Ceanothus integerrimus</i>), manzanita, chinquapin (<i>Chrysolepis chrysophylla</i>), bitter cherry (<i>Prunus emarginata</i>), gooseberry (<i>Ribes amarum</i>), and mountain misery (<i>Chamaebatia foliosa</i>) are common shrub species. Listed species that inhabit Sierran mixed conifer habitat include northern spotted owl and bald eagle.

**Table 4.5-1
 Habitat Types and Communities Occurring within the
 Shasta and Trinity River Divisions**

Habitat Type	Characteristics
Vernal pool (VP)	Vernal pools are seasonally wet areas where water temporarily ponds due to an underlying impervious rock or clay layer. This habitat type typically occurs as an inclusion in other habitats, most commonly within AGS or CRP habitat. These two habitat types commonly occur within BOP or BOW habitat in the project study area. Vernal pools support species such as the western spadefoot toad (<i>Scaphiopus hammondi</i>), and various frog species. Special-status species associated with vernal pool habitat include greater sandhill crane, vernal pool tadpole shrimp, vernal pool fairy shrimp, Greene's tuctoria, Slender Orcutt grass, and Boggs Lake hedge-hyssop.
Urban (URB)	Urban habitat includes five types of vegetative structure: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. A distinguishing feature of urban habitat is the mixture of native and exotic species. Both native and exotic species are valuable, with exotic species providing a good source for additional food in the form of fruits and berries. In the project area, urban habitat may have supplanted any of the habitats listed above. Urban vegetation is frequented by more disturbance-tolerant species such as northern mockingbird (<i>Mimus polyglottos</i>) American robin (<i>Turdus migratorius</i>), European starling (<i>Sturnus vulgaris</i>), California ground squirrel, Pacific tree frog, opossum (<i>Didelphis virginiana</i>), and western toad (<i>Bufo boreas</i>).

Source: North State Resources 2003

Special-Status Species

Special-status species are defined in this EA to include Federally and state-listed threatened or endangered species, species proposed for Federal listing as threatened or endangered, and Federal candidate species.

On June 27, 2003, the U.S. Fish and Wildlife Service (USFWS) provided an updated list of Endangered and Threatened Species That May Occur in or Be Affected by Projects in Shasta County (USFWS 2000a; Reference file No. 00-SP-2414) (Appendix D). A total of 13 Federal special-status wildlife and plant species and critical habitats for 17 species were identified.

Search results from the California Department of Fish and Game (CDFG) California Natural Diversity Database (CDFG 2003), and the CDFG list of Endangered and Threatened Animals of California (CDFG 2002) resulted in the inclusion of seven California special-status plant and wildlife species that could potentially occur in the portions of Shasta County covered by this EA. Query results from the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants (Skinner and Pavlick 1994) resulted in the inclusion of two California special-status plant species that could potentially occur in the Shasta County study area.

Appendix D lists the state and Federally listed species and critical habitats that could occur in Shasta County and that are considered in the analysis in this EA. The general habitat association for each species is also included in the appendix.

District water conservation plans have been prepared by the BVWD (January 1995), CCCSD (November 1994), City of Redding (undated, assume 1994), and City of Shasta Lake (March 1994). The district water

conservation plans were reviewed to ensure that listed plant and wildlife species identified by the districts were included in this analysis. The following species do not require further consideration in this EA for the reasons specified below:

Western yellow-billed cuckoo – The western yellow-billed cuckoo was historically common throughout the Central Valley and other lowland areas. It is now uncommon to rare in scattered locations throughout California (Zeiner and Laudenslayer et al. 1990). There are no recently reported observations of the western yellow-billed cuckoo in the project study area.

California red-legged frog – The historic range of the California red-legged frog extended into the Redding Basin, but the frog is believed to be locally extirpated. There have been no reported observations in the project area since 1925 (Jennings and Hayes 1994).

Shasta crayfish – the Shasta crayfish occurs only in streams in the Pit River, Fall River, and Hat Creek drainages. There are no known sightings of the Shasta crayfish in the project study area.

According to CFDG literature, there are no identified deer migration corridors, fall holding areas, fawning grounds, or critical winter range within the study area (Shasta County DRM 1998). However, deer are known to use all of the habitats described above.

4.5.2 ENVIRONMENTAL CONSEQUENCES

The incremental and cumulative effects of Alternatives 1 and 2 on biological resources are compared to the No Action Alternative.

No Action Alternative

Because renewal of the long-term contracts would not involve the construction of any physical facilities and structures, implementation of the No Action Alternative would not have direct effects on biological resources.

In Shasta County, long-term contract renewal would not be the sole or primary factor influencing changes to biological resources. Counties and cities can encourage or discourage changes to biological resources/habitats by approving or conditioning subdivisions and industrial developments within their jurisdictions. When a city or the County approves land use changes in a General Plan or specific plan, effects on biological resources and other resources must be addressed under the California Environmental Quality Act. These decisions occur independently of Reclamation's authorities and responsibilities. Similarly, a farmer who elects to cultivate one crop over another, or to fallow a parcel of land, may do so without Reclamation approval. However, Reclamation is required to analyze biological effects under the National Environmental Policy Act when Reclamation approves an expansion or a reduction of the service area boundary, or directs a change in water use or development.

Renewal of the long term contracts under the No Action Alternative is unlikely to result in incremental indirect effects to biological resources and habitats on parcels receiving M&I water. However, indirect effects on biological resources could occur in the two districts that are designated for CVP agricultural water use: BVWD and CCCSD. Under the No Action Alternative, contracts would increase the

minimum parcel size eligible to receive water at the lower irrigation rates; parcels less than or equal to 5 acres would receive water at M&I rates (not agricultural rates) unless Reclamation is satisfied that the water use is for commercial agricultural purposes. All water currently deemed commercial agricultural irrigation is expected to qualify as agricultural water under the No Action Alternative.

In 1996, a total of 7,319 acres within the BVWD and the CCCSD were designated for CVP agricultural water use and were irrigated with CVP water: 3,388 acres in the BVWD and 3,931 acres in the CCCSD. Under the No Action Alternative (2029 projection) for the BVWD, the irrigated acreage is assumed to increase to 5,960 acres and 5,890 acres for the average and dry conditions, respectively, per the predictions of the districts. Under the No Action Alternative (2029 projection) for the CCCSD, the irrigated acreage is assumed to increase to 4,690 acres and 4,640 acres for the average and dry conditions, respectively. (See also Table 4.3-17.) This indirect effect may have a beneficial or adverse effect on biological resources, depending on the specific parcels, habitats, and species under consideration. Reclamation is consulting with fish and wildlife agencies (Federal and state) regarding this indirect effect.

Alternative 1

Alternative 1 is assumed to have direct and indirect effects on biological resources similar to those of the No Action Alternative. Land use changes are anticipated over the next 25 years. However, the effects of Alternative 1 on agricultural water costs and associated land and water use are expected to be the same as the No Action Alternative. There would be no incremental direct or indirect environmental effects on biological resources under this alternative.

Alternative 2

Alternative 2 is assumed to have direct effects on biological resources similar to those of the No Action Alternative. There would be no incremental direct environmental effects on land use under this alternative.

Regarding indirect effects, Alternative 2 could cause a slight retraction of the regional economy and a consequent effect on M&I land use. A retraction of the regional economy would be expected to delay implementation of or reduce the scale of land uses that rely on M&I water deliveries, which is assumed to be a beneficial effect on biological resources. Regional economic impacts are expected to be small compared to the normal inter-year variation, so the beneficial effects on biological resources are expected to be small. Otherwise, Alternative 2 is assumed to have indirect effects on biological resources occurring on lands receiving M&I water similar the No Action Alternative. There are no other incremental indirect effects on biological resources occurring on lands receiving M&I water under this alternative.

Under Alternative 2, indirect effects to biological resources may occur on agricultural parcels due to redefining the parcel size eligible to receive water at the lower irrigation rate. Indirect effects are expected to be similar to those anticipated under the No Action Alternative. There are no incremental indirect effects due to rewording under this alternative.

For Contractors that deliver agricultural water (i.e., BVWD and CCCSD), substantial fallowing of lands may occur with implementation of Alternative 2 relative to the No Action Alternative. Almost all of the additional fallowed lands are projected to be taken out of pasture. The incremental acreage that may be

fallowed in 2029 under Alternative 2 versus the No Action Alternative are presented for the BVWD (average and dry conditions) in Table 4.3-19. These projections are presented for the CCCSD in Table 4.3-20.

As shown in Table 4.3-19, for the BVWD, implementation of Alternative 2 could result in increased fallowing (relative to the No Action Alternative) of about 800 acres in 2029 under average conditions and could result in increased fallowing of about 1,160 acres under dry conditions. These values represent 13 percent and 20 percent reductions, respectively, in the irrigated acreages that are assumed to occur under the No Action Alternative in average and dry conditions.

As shown in Table 4.3-20, for the CCCSD, implementation of Alternative 2 could result in increased fallowing (relative to the No Action Alternative) of about 510 acres in 2029 under average conditions and could result in increased fallowing of about 740 acres under dry conditions. These values represent 11 percent and 16 percent reductions, respectively, in the irrigated acreages that are assumed to occur under the No Action Alternative in average and dry conditions. Relative to the entire Trinity River Division, this reduction in irrigated acreage is considered a minor effect.

Increased fallowing may have variable indirect effects on biological resources. These indirect effects may be beneficial or adverse, depending on the specific parcels, habitats, and species under consideration.

Because of the inability to predict where the impacts of the proposed action will occur and the complexity of habitat use patterns by various wildlife species, only a limited number of general predictions can be made regarding the indirect effects of the increased acreage threshold (from 2 to 5 acres):

- In general, decreased irrigation of personal orchards/agricultural plots between 2 and 5 acres in size could indirectly benefit special status-species if the changes to land use result in improved water quality of run-off entering vernal features, drainages, streams, and rivers. Beneficial impacts to Federally listed, proposed, and candidate species could also occur if newly non-irrigated lands were allowed to remain in their natural condition or allowed to lie fallow.
- Decreased irrigation of certain parcels could result in slightly less water entering drainages and intermittent/perennial streams in summer months, which could adversely affect species such as Central Valley steelhead or spring-run chinook salmon that rely on Central Valley rivers and tributaries for a portion of their life cycle, but the effect is expected to be small since this run-off increment may be too warm to be very useful to salmon species.
- Increased subdivision of parcels resulting from the potential increased cost of CVP water could result in increased development and loss of habitat and subsequent impacts to Federally listed, proposed, or candidate species occupying those habitats. In addition, urban and other developed habitats generally receive high levels of human use, which disturb native species and restrict their use of the area (Reclamation 1997). However, if the change is from commercial pasture to recreational pasture for pet horses, the effects would be negligible.

Such potential land use actions will require separate determinations regarding potential effects on threatened and endangered species and critical habitat pursuant to Section 7 and/or Section 10 of the ESA.

Conversions from agricultural to M&I land use would not be caused by the terms of the renewal contract, nor by actions of the Contractors that have no land use planning jurisdiction. Instead, such changes will be the result of land use planning decisions of local regulating authorities. Any impacts or “take” associated with such changes would typically be the responsibility of the local CEQA lead agency.

4.5.3 CUMULATIVE EFFECTS

Alternatives 1 and 2 would not result in any cumulative direct effects to biological resources because there would be no infrastructure changes or physical disturbances due to changes in water purchasing by a water Contractor.

4.6 ENVIRONMENTAL JUSTICE

As mandated by Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” published February 11, 1994, this document addresses potential environmental justice concerns related to the long-term renewal of water contracts between Reclamation and the Shasta and Trinity River Divisions’ Contractors. The Executive Order requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

In August 1994, the Secretary of the Interior issued an environmental justice policy statement directing departmental action, resulting in Interior’s *Strategic Plan for Environmental Justice*. Reclamation’s decision-making process includes public involvement, Indian trust assets consultation, and coordination with potentially affected members of the public.

Renewal of the long-term water service contracts is not expected to disproportionately affect minority populations or low-income populations. Minority populations constitute about 10 percent of the population of Shasta County (California Department of Finance 2000), and are mainly in urban centers, which are less sensitive to price changes than agricultural users. Additionally, the proposed contract terms and provisions would not involve the construction of new facilities, cause the relocation of any populations, result in any known health hazards, cause the generation of any hazardous wastes, result in any property takings, or generate any substantial economic impacts.

The proposed long-term water service contract renewals would not have an adverse effect on human health or the environment, as defined by environmental justice policies and directives. Rather, renewal of the contracts would provide a long-term water supply that would meet the projected water demand and need, which have been previously been documented in the Shasta County General Plan and the general plans of affected cities.

4.7 INDIAN TRUST ASSETS

4.7.1 AFFECTED ENVIRONMENT

Indian trust assets are legal interests in property that are held in trust by the U.S. Government for Indian tribes or individuals. The Secretary of the Interior is the trustee for the United States on behalf of recognized Indian tribes. Examples of Trust assets are lands, minerals, hunting and fishing rights, and water rights.

Reclamation shares the responsibility to protect and maintain Indian Trust assets reserved by or granted to Indian Tribes or Indian individuals by treaty, statute, or Executive Order. Reclamation carries out its activities in a manner that protects trust assets and avoids impacts, where possible. Where not possible, compensation or mitigation is provided in consultation with affected Tribes.

There are no known federally recognized Indian trust assets within the contract service areas of the Shasta and Trinity River Divisions that would be affected, other than the Redding Rancheria, which receives M&I water from the City of Redding. The Redding Rancheria is located outside of the Buckeye Contract service area.

4.7.2 ENVIRONMENTAL CONSEQUENCES

No Action Alternative

There would be no environmental effects to Indian trust assets under the No Action Alternative.

Alternative 1

There would be no environmental effects to Indian trust assets under Alternative 1.

Alternative 2

There would be no environmental effects to Indian trust assets under Alternative 2. Effects to the Redding Rancheria would be the same as those experienced by residents of the City of Redding.

4.7.3 CUMULATIVE EFFECTS

Implementation of Alternative 1 or Alternative 2 would not affect Indian Trust assets and would therefore not contribute to cumulative effects to those assets.

4.8 CULTURAL RESOURCES

This section describes the cultural resources in the area of the 10 water service Contractors in the Shasta and Trinity River Divisions. The service area boundaries of these Contractors fall within one of the following: an unincorporated area of Shasta County, the limits of the City of Redding, or the limits of the City of Shasta Lake.

4.8.1 AFFECTED ENVIRONMENT

Prehistory

A paper presented by Elaine Sundahl (1992) provides the best existing overview of the prehistoric period within the study area. Although the field work completed and reported by Sundahl in this paper is more wide ranging, the paper accurately describes the prehistoric record within the study area.

The earliest defensibly dated cultural evidence from the region adjoining the study area comes from archaeological site CA-SHA-475 on the Squaw Creek drainage of Shasta Lake. Radiocarbon dates from the lowest stratum indicate human use dating between 6,530 and 7,580 years ago (Sundahl, 1992:99). Material in this layer represent the Borax Lake Pattern as described by Fredrickson (1973). This cultural tradition is also described in general texts (Chartkoff & Chartkoff, 1984:109; Moratto, 1984:82) as containing relatively large widestem points typically fashioned from Grasshopper Flat/Lost Iron Wells obsidian or local silicate materials and unshaped milling tools. This period, lasting until about 5,000 years ago, was likely typified by a foraging economy based on extensive hunting and the collection of native plants, especially hard seeds. This pattern is thought to be linked to Hokan-speaking people, quite possibly the ancestors of the Yana.

During the period between approximately 5,000 and 3,000 years ago, the tool kit of aboriginal inhabitants changed. This later pattern is termed the Squaw Creek Pattern, again based on Sundahl's work north of Shasta Lake. Contracting stem points, uniface points, and leaf-shaped points appear. These projectile points increasingly are made from Tuscan Source obsidian. Milling tools are evidenced by the addition of mortars and pestles. Hand stones (manos) used on mill stones (metates) are often extensively shaped in contrast to the earlier pattern. The use of mortars suggests an increased reliance on acorns and, perhaps, other softer foods. Evidence of this pattern is more widespread, which could be a factor of preservation or increasing human use.

The period between approximately 3,000 and 1,700 years ago is termed the Whiskeytown Pattern by Sundahl. It is typified by "...large and medium-sized corner-notched and side-notched points, manos, millingstones, and notched-pebble net weights" (Sundahl, 1992:103). Many sites in the Redding vicinity include clear evidence of this pattern. Although the foraging tradition of earlier patterns continued, an increased reliance on riverine resources is suggested by the location of the sites and the inclusion of the net weights.

The last period has long been described as the Shasta Complex (Meighan, 1955). However, Sundahl (1992:104) follows Fredrickson by terming this well-known period as the Augustine Pattern. During the last 1,500 years or so, the aboriginal inhabitants diversified and specialized in the exploitation of natural resources. Smaller barbed projectile points and shaft smoothers mark the appearance and increased use of

the bow and arrow. Specialization led to increased sedentism with relatively large seasonal encampments along the major streams and, especially, at their confluences within the study area. Bone fishing implements and the appearance of substantial quantities of shell and fish bone suggest a riverine-based economy. This cultural pattern is related to the appearance of Penutian speaking people from the Columbia Plateau. These people are assumed to be the ancestors of the modern Wintu.

Ethnography

Prior to appearance of Euro-American explorers and settlers, the study area was populated by the Wintu and Yana. The Wintu occupied all of the study area except the Cow Creek drainage, which fell on the northwestern edge of the Yana (Johnson, 1978:361). The Yana spoke a Hokan dialect (Shipley, 1978:86) whereas the Wintu spoke a Penutian language (Shipley, 1978:82,83). These languages were from different linguistic families.

In addition to the vast language differences, the two peoples occupied somewhat different environments. The Wintu appear to have spread rapidly and to have controlled the Sacramento River corridor and many of its most productive tributaries. The Yana were relegated to the eastern foothills and stream corridors of the southern Cascade.

The material culture and lifestyles of the two groups were, however, quite similar (DuBois, 1935; Johnson, 1978; LaPena, 1978; Sundahl, 1992:90). They both constructed semipermanent or permanent villages on the terraces above main stream corridors and emphasized the use of fish (especially salmon), shellfish, acorns, and other native plant foods. These staples were processed to provide food during the winter and other lean periods. Reliance on a variety of foods lessened the possibility of famine resulting from the failure of one or more food sources. Hunting augmented the staples of the diet (Sundahl, 1992:90). Skins acquired through the hunting or snaring of animals were processed and used for a variety of items, especially clothing. Housing consisted of conical, semi-subterranean family residences. These small structures (approximately 10 feet in diameter) often were located near a larger communal structure that was used variously as a residence and for ceremonies (LaPena, 1978:325,326; Johnson, 1978:367). The size of these communal structures appears to have increased through time.

History

The history of the greater Redding area revolves around mining, ranching, farming, lumbering, transportation, and tourism. The relative importance of these economic pursuits varied by place and time. However, they continue to play some role within the economy of the study area even today. Therefore, the following discussion is organized chronologically, with a brief discussion of the relative importance of these or other significant activities as derived from Petersen (1965).

Although the renowned trapper Jedediah Strong Smith is generally credited with the earliest (1828) Euro-American exploration through Shasta County, his party crossed only the far southwestern corner of Shasta County, well away from the study area. Other trappers crossed the area in hopes of claiming furs and land for Britain or the United States. These forays were upsetting to the Mexican government, which, although it had no presence within the study area during this early period, claimed sovereignty. Alexander McLeod (~~1929~~ 1829), Peter Ogden (1830), and John Work (1832) all represented the interests

of the Hudson Bay Company. Ewing Young was the first American (1832) known to actually cross the study area.

In response to these activities, the Mexican government pressed their sovereignty within the Sacramento Valley by providing land grants to Mexican citizens. Many of these citizens were American or European settlers. The most significant of these new land claimants within the study area was Pierson B. Reading, who was granted the 26,633-acre Buena Ventura land grant in 1844. The grant stretched along the west side of the Sacramento River from Salt Creek in the north to Cottonwood Creek in the south. Although his permanent abode and successful farming operation were located between the lower reaches of Anderson and Cottonwood Creeks, his actions would have significant effects on developments within and adjoining the study area.

Reading played a major role in the Bear Flag Revolt of 1846, which paved the way for American claims to California and the Mexican-American War of 1846-1847. Subsequent to the Mexican cession of California to the United States of America, gold was discovered in 1848 at Sutter's Mill, leading to the California gold rush. Pierson B. Reading was soon involved in the frenzy. He led parties to the second gold strike in California at Reading Bar on Clear Creek, which adjoins the study area, as well as to other discoveries of gold at Reading Bar on the Trinity River and Reading Springs (Old Shasta). These discoveries were the major impetus for the claiming, settlement, and subsequent development of Shasta and Trinity Counties. Within the study area, placer mining and, eventually, hard rock mining fueled the economy. Although mining activities did not occur in the eastern portion of the study area, ranching and farming activities were undertaken to support and profit from the mining communities. Mining flourished throughout the 1850s and 1860s, with individual operations giving way to corporate undertakings.

In 1872, the Central Pacific Railroad reached the new settlement of Redding, which was named after the railroad land agent B. B. Redding. Redding served as the railroad's terminus until 1883, when the route was pushed northward along the Sacramento River canyon. The quick development of Redding led to the demise of Shasta, which served as the county seat from 1851 until 1888. With local mining revenues gone, Shasta soon became a town "gone bust." Large hydraulic mining operations, including those within the study area, ceased in compliance with State law in 1884. Citizens residing in the study area increasingly depended on farming, ranching, and the railroad as the underpinnings of the economy. Happy Valley was the only irrigated area in the early 1880s. Produce grown as a result of this irrigation led to the Valley's settlement and development. Although other areas did not yet benefit from sizeable irrigation projects, extensive agriculture, livestock grazing, dairying, and manufacturing continued to support a growing population.

In the latter part of the nineteenth and early part of the twentieth centuries, large-scale mining returned with the extraction and smelting of copper from a belt running from Keswick upstream along the Sacramento and Pit Rivers to Bully Hill outside of the study area. By the conclusion of World War I, this industry had dwindled. The smelting activities laid ruin to a vast acreage of vegetation, including fruit trees as far away as Happy Valley and Anderson. Local manufacturing (e.g., Terry Lumber Company in Bella Vista and gold dredging along Clear Creek) profited during this copper heyday. All of these undertakings were made possible by the railroad. The study area headed into an economic decline during the 1920s and 1930s after the bust of the copper industry. Redding even lost population during this period.

4.8 Cultural Resources

With the construction of Shasta Dam in the late 1930s and early 1940s, the economy and population began an upward trend. Lumber mills were built within and, especially, south of the City of Redding following World War II to support development in California. Sand and gravel mining supplanted ore extraction within the study area. The completion of State Highway 99 in the 1920s augmented the shipping and transportation services of the railroad. With the proliferation of the automobile, the area became a destination for tourism and recreation.

Identified Cultural Resources

Table 4.8-1 lists the cultural resources identified within or adjacent to the service area boundaries of the Shasta and Trinity River Divisions.

**TABLE 4.8-1
CULTURAL RESOURCES IN THE SHASTA AND TRINITY RIVER DIVISIONS AREA¹**

Name of Cultural Resource	General Location	Theme ²
Bass Hill	North of Redding	EX/SE
Bells Bridge	Highway 99, Clear Creek	EX/SE
Benton Tract Site*	Redding	CULT
Briggsville	Clear Creek Road	EC/IN
California-Oregon Road	Anderson	EX/SE
Clear Creek	Redding	EC/IN
Cow Creek Petroglyphs	**	CULT
Horse Town	Clear Creek Road	EC/IN
Millville	Old 44 Drive	EC/IN
Old City Hall*	Redding	SO/ED
Olsen Petroglyphs	**	CULT
Pine Street School*	Redding	SO/ED
Pioneer Baby's Grave	West of Shasta	EX/SE
Ried Mine in Old Diggins	Summit City	EC/IN
Shasta State Historic Park	Highway 299, west of Redding	EC/IN
Shasta 47	Sacramento River - Redding	CULT
Texas Springs	Texas Springs Road	EC/IN

Source: State of California Department of Parks and Recreation

¹ The heritage resources listed here include resources listed in the National Register of Historic Places, the California Historical landmarks series, or the California Points of Interest program. In addition to the resources listed, there are approximately 500 known sites or areas of archaeological significance. The names and locations of these areas are not revealed in order to protect these sensitive resources. This information is on file with the Cultural Resources Section of the California Department of Parks and Recreation.

² Theme Code:

ARCH	Architecture	EX/SE	Exploration/Settlement	MIL	Military
CULT	Cultural (Aboriginal)	EC/IN	Economic/Industrial	REL	Religion
SO/ED	Social/Education				

* National Register of Historic Places site

** Information regarding the location of these resources is on file with the Cultural Resources Section of the California of Parks and Recreation

4.8.2 ENVIRONMENTAL CONSEQUENCES

No Action Alternative

The No Action Alternative would introduce no new facilities, no new construction activities, or no direct effects to the physical environment, and would therefore not result in any direct effects to cultural resources. Indirect effects to cultural resources due to planned growth and development within the unincorporated portions of Shasta County or within the City of Redding (Buckeye area) or City of Shasta Lake would be expected to occur over the next 25 years. Generally, such changes in land use are predicted to occur throughout Shasta County, independent of the long-term contract renewals, as the area transitions from a rural economy to a more suburban economy.

Under the No Action Alternative, indirect impacts could occur if property owners elect to change the use of their lands from agricultural uses to suburban or urban uses, or from suburban uses to agricultural uses. These changes in land use could affect both known and undiscovered cultural resources. Where sensitive cultural resources occur, both Federal and state jurisdictions provide programs to protect sensitive cultural resources.

For non-Federal actions, such as changes to a county or city general plan or the approval of a use permit, a lead agency under the California Environmental Quality Act (CEQA) would be the responsible decision maker, and impacts on cultural resources would be evaluated pursuant to CEQA. If a Federal action is proposed, such as changes to the CVP service area boundary, a Federal lead agency would be responsible for compliance under NEPA and Section 106 of the National Historic Preservation Act.

Alternative 1

Under Alternative 1, CVP operations and facilities would not be altered and impacts are expected to be identical to the No Action Alternative. Therefore, no incremental environmental effects from this alternative are expected.

Alternative 2

Under Alternative 2, effects to cultural resources would be the same as under the No Action Alternative. Therefore, no incremental environmental effects from this alternative are expected.

4.8.3 CUMULATIVE EFFECTS

Demographic, economic, political, and other factors, independent of implementation of Alternatives 1 or 2, are causing changes with direct and indirect effects to cultural resources that are beyond the range of Reclamation's Section 106 responsibilities. The effects of Alternatives 1 and 2 on cultural resources are expected to be the same as the likely effects of the No Action Alternative. Therefore, the incremental effects to cultural resources due to the approval and conditions of the long-term contract renewal change between the No Action Alternative and Alternatives 1 and 2 is expected to be minor. The proposed action (approval of long-term contract renewals) is not expected to contribute to cumulative impacts to cultural resources.

4.9 — IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

~~NEPA Section 102(C)(v) requires federal agencies to consider to the fullest extent possible any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The proposed action is the renewal of existing contracts and does not involve construction or the use of resources except water. There is no other commitment of nonrenewable resources, and the proposed action does not commit future generations to permanent use of natural resources.~~

~~4.10 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY~~

~~NEPA Section 102(c)(iv) requires all federal agencies to disclose the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity. These water delivery contracts are temporary (25 or 40 years), yet result in long-term benefits to the human environment in the Central Valley. Long-term productivity would be enhanced through the water supply that sustains agricultural economies, social benefits, and the long-term productivity of urban and rural populations by providing CVP water.~~

CHAPTER 5

OTHER ACTIVITIES

5.1 INTRODUCTION

Other activities that may have a relationship to the 10 water service Contractors in the Shasta and Trinity Divisions include the actions described below.

- Implementation of the Bay-Delta Plan
- Completion of water transfer actions
- Completion of the Conformed Place of Use EIR for CVP Water Supplies
- Recommendations for increased instream flows in the Trinity River
- Implementation of the Sacramento and San Joaquin River Basins Comprehensive Study
- Changes in Federal farm programs
- Changes in demand for agricultural products
- Implementation of Yield Increase Plan
- Additional listings of special-status species

A summary of the potential effects of these actions and how they may influence the effects of implementing the alternatives considered in this EA is presented in Table 5-1.

**TABLE 5-1
SUMMARY OF CUMULATIVE EFFECTS**

Action	Potential Results
Implementation of the Bay-Delta Plan Accord	Changes in Delta inflow and associated instream releases. Improved water supply reliability through the water quality improvement programs and potential development of groundwater and/or above ground storage and/or conveyance facilities
Water Transfer Actions	Water transfers for both CVP and non-CVP water transfers
Place of Use EIR for CVP Water Supplies	Permitting of CVP water service areas currently served with CVP water but outside of authorized Place of Use
Trinity River Studies	Changes in instream flow requirements for Trinity River

**TABLE 5-1
SUMMARY OF CUMULATIVE EFFECTS**

Action	Potential Results
CVP Operations and Maintenance Agreements	Transfer of operations and maintenance responsibilities to local water user groups under the CVP
Sacramento Water Forum Proposal	Changes in water demands and flow requirements on American River
Changes in Federal Farm Programs	If lands fallowed or retired due to CVP pricing actions continue to accumulate support payments, the net revenue to farmers may increase and the revenue to the Federal Treasury may not increase.
Changes in Demand for Agricultural Products	If changes in demand increase crop value, farmers would be less willing to sell water. If changes in demand decrease crop value, farmers would be more willing to sell water.
Yield Increase Plan	Development of facilities and programs to increase CVP water supplies could reduce impact of shortages.
Future Listings under ESA of Special-Status Species	Initiation of consultation with the Service and National Marine Fisheries Service

5.2 IMPLEMENTATION OF BAY-DELTA PLAN

As a follow-up to adoption of the 1995 Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary, the SWRCB is evaluating alternatives for implementing that plan. The process includes the SWRCB water rights process and the CALFED Bay-Delta Program.

5.3 SWRCB WATER RIGHTS

The purpose of the SWRCB water rights process for Delta water quality and quantity is to develop a methodology to provide adequate flows to meet the Bay-Delta Plan Accord. The SWRCB process is evaluating several alternatives that would require different agencies, including the CVP and SWP, to release water in a manner that protects Delta quality.

This process may increase the amount of water provided by other water rights holders to meet Bay-Delta water quality standards, but it is anticipated that the impacts to the CVP water supply would not be more severe than the impacts presented in the PEIS and this EA. Consequently, operations of upstream projects may change. Because the outcome is not fully developed, a conservative assumption was used in modeling for the PEIS and this EA. It was assumed that the Bay-Delta Accord criteria would be the long-term plan for the Delta. If instream flows provided by the other water rights holders increase, some portion of the CALFED Ecosystem Restoration Program environmental flows could be satisfied by this water rights process, which may reduce the amount of water that the program needs to acquire from willing sellers. It may also reduce the amount of water that the program needs to develop or may allow for

the developed water to be used more effectively in meeting program objectives. Any additional demand on water right holders could decrease the amount of water available for transfer.

5.4 CALFED-BAY DELTA PROGRAM

The CALFED Bay-Delta Program (CALFED Program) is a cooperative effort of 15 State and Federal agencies with regulatory and management responsibilities in the Bay-Delta system. The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. The CALFED Program began in May 1995 to address the complex issues that surround the Bay-Delta and the CALFED Agencies have completed the Final Programmatic Environmental Impact Statement/Report (EIS/EIR) for the CALFED Bay-Delta Program, including the Preferred Program Alternative. The August 28, 2000, signing of the CALFED Programmatic Record of Decision (ROD) marked the beginning of implementation for the 30-year program and details on implementation during Stage 1 (the first 7 years of the implementation).

The CALFED Preferred Program Alternative includes the following components: Ecosystem Restoration, Watershed Protection, Water Supply Reliability, Water Storage and Conveyance, Environmental Water Account and Commitments, Water Use Efficiency and Conservation, Water Quality Improvements, Water Transfers, Levee System Integrity, Science Program, Establishment of a Governance Structure for Implementation of CALFED, and a Regional Approach to Ecosystem/Water Management.

Many of these programs could improve water supply reliability and water quality for CVP water service Contractors, especially those located south of the Delta. The CALFED Preferred Program Alternative includes the following components to improve water supply reliability and water quality.

- Water Use Efficiency Program (agricultural, urban, and wetland water conservation and water recycling)
- Water Transfer Program
- Conveyance, including South Delta Improvements
- Surface and groundwater storage
- Operational strategies, such as real-time diversion management through use of the Environmental Water Account
- Water quality improvements to enable users to divert more water to storage during periods of high Delta water quality, reduce contaminants and salinity that impair Delta water quality, evaluate alternative approaches to address disinfection byproducts and salinity issues, and enable voluntary exchanges or purchases of high-quality source waters for drinking water uses.

In addition, other parts of the CALFED Program can provide water supply reliability and water quality benefits. These include the Watershed Program and real-time monitoring through the Science Program.

CALFED's goals for water supply reliability include:

- Increase the utility of available water supplies (making water suitable for more uses and reuses)
- Improve access to existing or new water supplies, in an economically efficient manner, for environmental, urban and agricultural beneficial uses
- Improve flexibility of managing water supply and demand in order to reduce conflicts between beneficial uses, improve access to water supplies, and decrease system vulnerability.

The CALFED Final Programmatic EIS/EIR shows that on an annual basis, without additional storage, the Preferred Program Alternative increases long-term Delta exports by an additional 250,000 to 380,000 acre-feet over the CALFED No-Action Alternative, which is similar to the PEIS No-Action Alternative. With additional storage, the Preferred Program Alternative increases annual Delta exports by 490,000 to 900,000 acre-feet over the CALFED No-Action Alternative.

On an annual basis, without additional storage, the Preferred Program Alternative increases dry- and critical-year Delta exports by an additional 50,000 to 180,000 acre-feet over the CALFED No-Action Alternative. With additional storage, the Preferred Program Alternative increases annual Delta exports from 180,000 to 670,000 acre-feet over the CALFED No-Action Alternative.

In addition, water conservation and recycling will save additional water for use. The potential for water use efficiency varies significantly in California, depending on the region of the State and the sector involved. Working with the stakeholder steering committees and other technical experts, CALFED agencies have developed ranges of estimated water savings during Stage 1 of implementation. These estimates include only water that is currently unavailable for other uses because it is lost to excessive evaporation or drains to the ocean or some other unusable destination. In addition, water can be made available through water reclamation projects. These water savings would include 520,000 to 688,000 acre-feet from urban uses, 260,000 to 350,000 acre-feet from agricultural uses, and 225,000 to 310,000 acre-feet in water reclamation projects for both urban and agricultural uses.

Actions initiated in the first four years of Stage 1 to improve storage and conveyance capacity will substantially increase water supply reliability in the later years, but these benefits will not be realized until the new facilities come on line. Similarly, it will take years to implement and fully realize the water supply benefits of water use efficiency, recycling, and other conservation measures. Therefore, the greatest challenge to improving water supply reliability lies in the first four years of Stage 1. To address these water supply reliability challenges in this short period, the CALFED Record of Decision outlines the following actions.

- Establishment of an Environmental Water Account (EWA) with an average of 380,000 acre-feet set aside annually in the first years to provide additional water for fishery purposes beyond the Regulatory Baseline.
- Establishment of a Regulatory Baseline by delineating existing regulatory requirements and clarifying implementation of specific regulatory actions.

- A commitment that there will be no reductions, beyond the baseline regulatory levels, resulting from measures to protect fish.
- Seek SWRCB approval of Joint Point of Diversion and share water derived from Joint Point of Diversion between the CVP and the EWA.
- Implement conjunctive management projects, water conservation measures, and water transfers.
- Begin implementation of storage projects.
- Allocate Proposition 13 funds dedicated to interim water supply reliability and water quality.

The CALFED ROD also concludes that these actions in the first four years are likely to improve Delta exports for CVP south-of-Delta agricultural water service Contractors, as described in the following:

“In the first four years of Stage 1, it is anticipated that water deliveries will remain at recent levels for most water users who depend upon water from the CVP, including Exchange Contractors, North of Delta CVP agricultural Contractors, refuges, and M&I Contractors, as well as for SWP Contractors and non-project water users. It is also anticipated that implementation of Joint Point of Diversion, operational flexibility, interagency cooperation, EWA implementation, and other cooperative water management actions (some of which may require further specific environmental review) will result in normal years in an increase to CVP south-of-Delta agricultural water service Contractors of 15 percent (or greater) of existing contract totals to 65 to 70 percent. This normal year supply improvement may not be achieved in all years due to annual hydrologic variability and its impact on carryover storage conditions. Substantial progress toward implementation of other program elements, such as development of EWA assets, is also necessary. Water supplies in dry years are likely to be less than the anticipated amounts and more in above normal years. As discussed in the ROD, CALFED agencies are committed to working with local agencies to implement these regional supply actions and to support local water management actions including conservation and other local measures. Part of this effort will include development of a plan for alternative refuge supplies and conveyance.”

5.5 WATER TRANSFERS

The use of water transfers to allow water trades between willing sellers and buyers is expected by many experts to be used increasingly in the future. Transfers provide an opportunity to increase or replace water supplies to support future demands. Overall, implementation of water transfer programs will meet part of the water demand that has been identified by DWR as being unmet by current water supplies. The DWR identified 2.9 to 4.9 million acre-feet of projected water demand that would not be met by existing water facilities, water conservation, and wastewater reclamation if all entitlements and water rights continue to be delivered to existing users. Water transfers can be used in the future to reduce the currently unmet future demand. Therefore, water transfers may be beneficial from a cumulative statewide perspective. However, each transfer proposal must be evaluated individually to determine direct or indirect impacts at a project-specific level.

Cumulative impacts associated with the transfer of water must consider the impacts of other water transfers that would occur throughout the Central Valley. Reclamation has purchased water in the Sacramento and San Joaquin valleys from water rights holders to improve instream fishery flows, Delta outflows, and refuge water supplies. Water also has been purchased on an annual basis by agricultural users on both the eastern and western sides of the San Joaquin Valley to improve water reliability. Water users located in the watersheds of the upper Sacramento, Feather, Yuba, and Bear rivers have participated or are considering participation in short-term water transfers of 1- to 5-year periods for water supplies and/or fish and wildlife uses. However, projects and locations have not been fully evaluated at this time.

Specific water transfers may reduce the ability of other agencies to purchase and transfer water. If the amount of water available for transfers is reduced, the users who do not purchase the water will either increase groundwater withdrawals, which may lead to increased rates of overdraft and subsidence, or purchase more expensive water supplies, which could increase the cost of agricultural crops or reduce net revenues.

Transfers of water held in post-1914 water rights must be evaluated in some type of environmental documentation. These environmental documents evaluate several issues, including the following items, which may have potential adverse impacts:

- Transfers that could reduce Delta inflow during certain critical time periods
- Entrainment losses of some fish due to diversions at new locations
- Losses of fish due to changes in flow patterns that may raise temperatures or dewater or flood spawning areas
- Reduced reservoir levels and associated recreation actions
- Reduced irrigated acreage and wetlands due to changes in water use or return flows
- Reduced employment opportunities due to land fallowing to make the water available
- Reduced groundwater levels due to the replacement of transferred water with additional withdrawals or due to reduction in applied irrigation water that percolates into the aquifer.

It has been difficult in many cases to complete the environmental documentation and obtain approval from the SWRCB, SWP, or CVP during an irrigation season in a timely manner. If these approvals do not occur in a timely manner, unnecessary water may be purchased or users may decide to defer actions that would require full water supplies.

To alleviate this issue, several programmatic environmental documents have been completed and the overall concepts are included in the long-term contracts considered under Alternatives 1 and 2. For example, Reclamation completed the Eastside/Westside Water Transfer/Exchange EA for approval of annual exchange/transfer(s) of up to 150,000 acre-feet of CVP water between CVP Contractors through an internal exchange of SWP water by the Kern County Water Agency. This approval process would be

in effect for 5 years, between March 2001 and February 2006. Specific transfers under this type of program would be compared with the specific approved actions to determine that adverse environmental impacts would not occur.

Similar programmatic approaches for approval of transfers within regional trading zones are being considered under the CALFED process and through the Governor's Drought Contingency Panel.

5.6 TRINITY RIVER STUDIES

In October 1984, the Service began a 12-year study to describe the effectiveness of increased flows and other habitat restoration activities to restore fishery populations in the Trinity River. An EIS/EIR was completed in October 2000 under a concurrent program to evaluate alternatives to restore and maintain natural production of anadromous fish in the Trinity River mainstem downstream of Lewiston Dam. Historically, an average annual quantity of approximately 1.3 million acre-feet of water has been diverted from the Trinity River to the Sacramento River system (1964-1992). A change in the Trinity River flow requirements and a corresponding change in the amount of water diverted to the Sacramento River system could affect future flows to the Delta. Changes also could affect overall water supply reliability and carryover storage in Shasta Reservoir, and water quality and temperature in the Sacramento River.

The alternatives in this EA were developed in 1999-2000, and assumed minimum instream flow requirements for the Trinity River of 390,000 acre-feet/year in critical dry years to 750,000 acre-feet/year in extremely wet years. These flows represent the initial flow recommendation in the Trinity River Flow Evaluation. That initial flow recommendation has since been refined in the Trinity River Flow Evaluation report as: 368,000 acre-feet/year in critical dry years to 815,000 acre-feet/year in extremely wet years. A Record of Decision (ROD) was signed in December 2000 authorizing the refined flow recommendation. In May 2001, a suit was filed against the decision by Central Valley water and power interests to prohibit implementation of flow-related aspects of the ROD. On July 14, 2004, the 9th U.S. Circuit Court of Appeals reversed a lower court ruling (that had halted implementation of flow-related aspects) in favor of the refined flow recommendations for the Trinity River. The Central Valley water and power users are considering asking the 9th Circuit Court to reconsider its ruling. Therefore, the flow recommendations for the Trinity River are not final.

This EA and the PEIS made assumptions about Trinity River flows for the purposes of analysis. To provide a broad range to the analysis in the PEIS, the Cumulative Effects Analysis assumed the flow of 390,000 acre-feet (driest years) and 750,000 acre-feet (wettest years). These flows are the same as those used in the Preferred Alternative in the Trinity River Flow Draft EIR/EIS.

5.7 TRANSFER OF OPERATIONS AND MAINTENANCE RESPONSIBILITIES

Several of the local water user groups provide a portion of the operation and maintenance requirements for CVP facilities that serve only that user group. For example, Clear Creek Community Services is responsible for operating and maintaining the Muletown Conduit serving CCCSD and CCSD (Centerville). Alternative 1 provides for this type of operations and maintenance. Any transfer of

operations and maintenance for specific facilities to non-Federal entities could be completed under Alternative 1 following completion of appropriate environmental documentation and approvals.

5.8 CHANGES IN FEDERAL PROGRAMS

The 1996 Farm Bill revised the way commodity payments are determined, and decoupled the size of the payment from the actual production level. There remains, however, some uncertainty about how the U.S. Department of Agriculture (USDA) will handle lands that are part of a grower's base acreage, yet are retired or fallowed as CVPIA is implemented. For purposes of this EA analysis, it was assumed that USDA would remove such lands from the grower's base acreage and reduce the deficiency payment accordingly. The estimates of changes in farm commodity payments are based on that assumption.

If, instead, growers who retire or fallow their land as part of CVPIA implementation continue to receive program payments associated with that land, then no savings would accrue to the Federal treasury. However, net revenues to the farmers would increase. This may lead to greater participation in the water transfer market, which may lead to a lower cost for water. Either or both of these impacts could increase the amount of water purchased by the U.S. Department of the Interior for water acquisitions. Because the 1996 Farm Bill extends for only a limited number of years, great uncertainty remains about interactions between CVPIA and Federal commodity programs.

5.9 CHANGING DEMAND FOR AGRICULTURAL PRODUCTS

The analyses in the PEIS and this EA used real 1994 prices and costs and did not attempt to estimate differential increases in prices and costs in the future. However, some evidence exists that demands for farm produce, especially fruits and vegetables grown in California, will increase in the future and cause their prices to increase faster than the overall inflation rate. If this occurs, the costs associated with acreage reductions estimated in this study are understated. Higher value for crops would increase the cost of water or reduce the willingness of sellers to participate in the transfer market. This would decrease the opportunities for Interior to acquire water for fish and wildlife purposes.

Another view is that increasing competition from expanding production regions, especially in Central and South America, will hold future price increases to below the level of inflation. Lower value for crops would decrease the cost of water or increase the willingness of sellers to participate in the transfer market. Changes in demand could change the ratio of permanent to annual crops. If more permanent crops were planted, the effects of changes in water availability on an annual basis could become more significant.

5.10 YIELD INCREASE PLAN

As part of the CVPIA, the Least-Cost Yield Increase Plan was completed to describe possible actions to increase CVP yield. The yield increase options considered in the plan ranged from purchase of water supplies, land fallowing, conjunctive use, water conservation and urban wastewater reuse, to off stream storage. New facilities, water reuse, and conjunctive use methods could reduce the shortages that are projected under the PEIS alternatives. The PEIS identified land fallowing and water conservation as measures to provide additional water supplies for fish and wildlife purposes. Implementation of water purchases for both purposes could cause conflicts, or could be implemented in a way that would benefit both programs. For example, if acquired water purchased to increase instream flows were diverted

downstream of the critical reaches and stored in an off stream storage facility, both purposes would benefit. In addition, the cost to both users would be lower.

5.11 ADDITIONAL LISTINGS OF SPECIAL-STATUS SPECIES

There is a high probability that new special-status species will be listed and others will possibly be de-listed. As listings occur, Reclamation and the Service will follow the requirements under the Endangered Species Act and conduct consultation as required. Additional conservation actions are anticipated under the Conservation Program, Anadromous Fish Restoration Program, and CALFED that will aid in ecosystem restoration and improve the status of special-status species, so the need for future listings may be reduced.

CHAPTER 6

CONSULTATION AND COORDINATION

6.1 INTRODUCTION

Prior to preparation of this EA, input was solicited and incorporated from a broad range of cooperating and consulting agencies and the public. This chapter summarizes the public involvement program and key issues raised by the public and interest groups. This chapter also addresses the manner in which Federal statutes, implementing regulations, and executive orders potentially applicable to implementation of the CVPIA have been addressed. The conclusions of compliance are based on the Environmental Consequences presented in Chapter 4. The compliance summaries apply only to the alternatives discussed in this EA and not the development of concurrent CVPIA implementation programs.

6.2 PUBLIC INVOLVEMENT

Reclamation started the preparation of this EA with Scoping Meetings. Scoping served as a fact-finding process to identify public concerns and recommendations about the long-term contract renewal issues that would be addressed in this EA and the scope and level of detail for analyses. Scoping activities began in October 1998 after a Notice of Intent to prepare environmental documentation for long-term contract renewals was filed in the Federal Register. The scoping period formally ended in January 1999. The Scoping Report was released in summer of 1999.

Public input continued during long-term contract negotiations to define the contract language. Discussions were also held with the Shasta and Trinity long-term water service Contractors during the preparation of this document.

At public scoping meetings, Reclamation provided information about the long-term contract renewal process, and solicited public comments, questions, and concerns. At these meetings, participants had numerous comments and questions about how important issues would be considered both in the PEIS and the long-term contract renewal process. The majority of the comments received during the Scoping process addressed the Needs Assessment methodology to be used as part of the long-term contract renewal process. Contract renewal negotiation issues were also addressed. The least number of comments addressed environmental review issues.

Reclamation received numerous comments about issues to be considered in the PEIS and methodologies for analyzing impacts. Comments concerning the development of alternatives were considered in the formation of the alternatives. However, a decision was made to focus the description of alternatives on the contract proposals, and to address issues related to water supply improvements being addressed by CALFED and the Least Cost Yield study. Consideration of comments on methods to address impacts

were considered in the development of the Environmental Consequences section of this EA. However, the impact analysis focused on the comparison of the alternatives with the projected No-Action Alternative, not the Existing Conditions scenario.

Draft EAs for this action were provided for public review in 2000 and 2004.

6.3 WITH OTHER AGENCIES

This EA was prepared in accordance with the policies and regulations for the following issues. These issues and how compliance was addressed in this EA are discussed in the remaining sections of this chapter. Work is continuing on each of these requirements. As individual projects are implemented, compliance requirements will be considered.

- National Environmental Policy Act (NEPA)
- California Environmental Quality Act (CEQA)
- Endangered Species Act (ESA)
- Fish and Wildlife Coordination Act (FWCA)
- National Historic Preservation Act (NHPA)
- Indian Trust Assets (ITA)
- Indian Sacred Sites on Federal Land
- Environmental Justice
- State, Area-wide, and Local Plan and Program Consistency
- Floodplain Management
- Wetlands Protection
- Wild and Scenic Rivers Act
- Farmland Protection Policy Act and Farmland Preservation
- Clean Air Act
- Safe Drinking Water Act (SDWA)
- Clean Water Act (CWA)

6.3.1 NATIONAL ENVIRONMENTAL POLICY ACT

This EA was prepared pursuant to regulations implementing the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*). NEPA provides a commitment that Federal agencies will consider the environmental effects of their actions. This EA tiers off of the PEIS (40 CFR 1508.28) and evaluates the potential site-specific environmental and socioeconomic effects of renewing the long-term water service contracts for the Shasta and Trinity Divisions. This EA also provides information regarding the No-Action Alternative and alternatives, and environmental impacts of the alternatives.

6.3.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Implementation, funding, and permitting actions carried out by State and local agencies must comply with the California Environmental Quality Act (CEQA). The CEQA requirements are similar to NEPA requirements. This EA could be used as a basis for preparation of a CEQA document.

6.3.3 ENDANGERED SPECIES ACT

Reclamation prepared a Biological Assessment/Essential Fish Habitat Assessment in August 2003 to determine if the proposed action will affect listed threatened and endangered species (North State Resources 2003). The biological assessment addressed all species affected by the action of contract renewals in the water divisions. Tables 8a and 8b of the Biological Assessment/Essential Fish Habitat Assessment summarize potential impacts to Federally listed, proposed, and candidate species, and designated or proposed critical habitat on a district-by-district basis for the Trinity River District and the Shasta District, respectively. Depending on the district, special-status species and critical habitats may be affected, but are unlikely to be adversely affected by long-term contract renewal.

Consultation with the U.S. Fish and Wildlife Service (USFWS) has been completed for seven of the ten long-term water service contract renewals in the Shasta and Trinity River Divisions. For all seven contracts, the USFWS has concurred with the determinations of the BA, which are that the long-term contract renewals are not likely to adversely affect special-status species and designated or proposed critical habitats of those species. A similar conclusion is expected for the remaining three contracts.

Consultation with the National Oceanic and Atmospheric Administration (NOAA) and USFWS must be completed before Reclamation can approve Findings for a proposed action. Reclamation must sign the Findings (FONSI) before long term renewal contracts can be signed by Reclamation.

USFWS and NOAA letters of consultation are provided at the conclusion of Chapter 6.

6.3.4 FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (Federal and state) on all water development projects that could affect biological resources. The implementation of the CVPIA, of which this action is a part, has been jointly analyzed by Reclamation and the USFWS and is being jointly implemented. This continuous consultation and consideration of the views of the USFWS in addition to its review of this document and consideration of its comments satisfies any applicable requirements of the FWCA.

6.3.5 NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act (NHPA) requires that Federal agencies evaluate the effects of Federal undertakings on historical, archeological, and cultural resources and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertaking. The first step in the process is to identify cultural resources included on (or eligible for inclusion on) the National Register of Historic Places that are located in or near the project area. The second step is to identify the possible effects of proposed actions. The lead agency must examine whether feasible alternatives exist that would avoid such effects. If an effect cannot reasonably be avoided, measures must be taken to minimize or mitigate potential adverse effects. Reclamation staff will complete the Section 106 consultation process prior to implementing any actions.

6.3.6 INDIAN TRUST ASSETS

The United States Government's trust responsibility for Indian resources requires Reclamation and other agencies to take measures to protect and maintain trust resources. These responsibilities include taking reasonable actions to preserve and restore tribal resources. Indian Trust Assets (ITAs) are legal interests in property and rights held in trust by the United States for Indian tribes or individuals. Indian reservations, rancherias, and allotments are common ITAs. Based upon information provided by Reclamation, no ITAs exist within the Shasta and Trinity Divisions.

6.3.7 INDIAN SACRED SITES ON FEDERAL LAND

Executive Order 13007 provides that in managing Federal lands, each Federal agency with statutory or administrative responsibility for management of Federal lands shall, to the extent practicable and as permitted by law, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites. No sacred sites were identified during the scoping or planning process, and, therefore, none were included in the impact assessment of this EA.

6.3.8 ENVIRONMENTAL JUSTICE

Executive Order 12898 requires each Federal agency to achieve environmental justice as part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects, including social or economic effects, of programs, policies, and activities on minority populations and low-income populations of the United States. This EA has evaluated the environmental, social, and economic impacts on minority and low-income populations in the impact assessment of alternatives. No disproportionate impacts on minority or low-income populations were identified.

6.3.9 STATE, AREA-WIDE, AND LOCAL PLAN AND PROGRAM CONSISTENCY

Executive Order 12372 requires that Federal agencies provide for opportunities for state and local officials to provide input on proposed Federal assistance or development actions. Consistency of the proposed action with the plans and policies of the City of Redding, City of Shasta Lake, and Shasta County have been considered, and input from Federal, state, and local officials has been sought in

developing the analysis for this EA. The Draft EA will be circulated to the appropriate state and local agencies to satisfy review and consultation requirements.

6.3.10 FLOODPLAIN MANAGEMENT

If a Federal agency program will affect a floodplain, the agency must consider alternatives to avoid adverse effects in the floodplain or to minimize potential harm. Executive Order 11988 requires Federal agencies to evaluate the potential effects of any actions they might take in a floodplain and to ensure that planning, programs, and budget requests reflect consideration of flood hazards and floodplain management. The alternatives would not affect floodplain management as compared to the No-Action Alternative.

6.3.11 WETLANDS PROTECTION

Executive Order 11990 authorizes Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. Any agency considering a proposal that might affect wetlands must evaluate factors affecting wetland quality and survival. These factors should include the proposal's effects on the public health, safety, and welfare due to modifications in water supply and water quality; maintenance of natural ecosystems and conservation of flora and fauna; and other recreational, scientific, and cultural uses. The alternatives would not affect wetlands as compared to the No-Action Alternative.

6.3.12 WILD AND SCENIC RIVERS ACT

The Wild and Scenic Rivers Act designates qualifying free-flowing river segments as wild, scenic, or recreational. The Act establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory. Under the Act, a Federal agency may not assist in the construction of a water resources project that would have a direct and adverse effect on the free-flowing, scenic, and natural values of a wild or scenic river. If the project would affect the free-flowing characteristics of a designated river or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area, such activities should be undertaken in a manner that would minimize adverse impacts and should be developed in consultation with the National Park Service. None of the EA alternatives would adversely effect flows in wild and scenic, or recreational rivers.

6.3.13 FARMLAND PROTECTION POLICY ACT AND FARMLAND PRESERVATION

Two policies require Federal agencies to include assessments of the potential effects of a proposed project on prime and unique farmland. These policies are the Farmland Protection Policy Act of 1981 and the Memoranda on Farmland Preservation, dated August 30, 1976, and August 11, 1980, respectively, from the U.S. Council on Environmental Quality. Under requirements set forth in these policies, Federal agencies must determine these effects before taking any action that could result in converting designated prime or unique farmland for nonagricultural purposes. If implementing a project would adversely affect farmland preservation, the agencies must consider alternatives to lessen those effects. Federal agencies also must ensure that their programs, to the extent practicable, are compatible with state, local, and private

programs to protect farmland. The Natural Resource Conservation Service (NRCS) is the Federal agency responsible for ensuring that these laws and polices are followed. No specific consultation was conducted during preparation of this EA. The alternatives would not affect agricultural or urban lands as compared to the No-Action Alternative.

6.3.14 CLEAN AIR ACT

The Federal Clean Air Act (CAA) was enacted to protect and enhance the nation's air quality in order to promote public health and welfare and the productive capacity of the nation's population. The CAA requires an evaluation of any Federal action to determine its potential impact on air quality in the project region. Coordination is required with the appropriate local air quality management district as well as with the EPA. This coordination would determine whether the project conforms to the Federal Implementation Plan and the State Implementation Plan (SIP).

Section 176 of the CAA (42 U.S.C. Section 7506(c)) prohibits Federal agencies from engaging in or supporting in any way an action or activity that does not conform to an applicable SIP. Actions and activities must conform to a SIP's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and in attaining those standards expeditiously. EPA promulgated conformity regulations (codified in 40 CFR Section 93.150 *et seq.*).

The alternatives assume that current practices to control dust and soil erosion on lands that are seasonally fallowed would continue and that the land use agencies would continue to work with the air quality districts. Therefore, it assumed that no air quality impacts would occur due to the alternatives as compared to the No Action Alternative.

6.3.15 SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) (PL 99-339) became law in 1974 and was reauthorized in 1986 and again in August 1996. Through the SDWA, Congress gave the EPA the authority to set standards for contaminants in drinking water supplies. Amendments to the SDWA provide more flexibility, more state responsibility, and more problem prevention approaches. The law changes the standard-setting procedure for drinking water and establishes a State Revolving Loan Fund to help public water systems improve their facilities and to ensure compliance with drinking water regulations and to support state drinking water program activities.

Under the SDWA provisions, the California Department of Health Services has the primary enforcement responsibility. The California Health and Safety Code establishes this authority and stipulates drinking water quality and monitoring standards. To maintain primacy, a state's drinking water regulations cannot be less stringent than the Federal standards. The analysis of the EA alternatives as compared to the SDWA requirements indicated that there were no changes in compliance as compared to the No-Action Alternative.

6.3.16 CLEAN WATER ACT

The Clean Water Act (CWA) gave the EPA the authority to develop a program to make all waters of the United States “fishable and swimmable.” This program has included identifying existing and proposed beneficial uses and methods to protect and/or restore those beneficial uses. The CWA contains many provisions, including provisions that regulate the discharge of pollutants into water bodies. The discharges may be direct flows from point sources, such as an effluent from a wastewater treatment plant, or a non-point source, such as eroded soil particles from a construction site. The analysis of the EA alternatives as compared to the CWA requirements indicated that there were no changes in compliance as compared to the No-Action Alternative.

References, Persons Consulted, and Acronyms

CHAPTER 7

REFERENCES, PERSONS CONSULTED, AND ACRONYMS

7.1 REFERENCES

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7.2 PERSONS CONSULTED

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7.3 ACRONYMS

AB	Assembly Bill
BVWD	Bella Vista Water District
CCSD	Centerville Community Services District
OCCSD	Clear Creek Community Services District
CDOF	California Department of Finance
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
COS	cost-of-service
CVP	Central Valley Project
CVP-OCAP	Central Valley Project-Operations Criteria and Plan
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DAU	Drainage Area Units
DWR	California Department of Water Resources
EA	Environmental Assessment
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FC	full cost
ITAs	Indian Trust Assets
KCSA	Keswick County Service Area
LTCR	Long Term Contract Renewal
mgd	million gallons per day
M&I	municipal and industrial
MGCSD	Mountain Gate Community Services District
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
<u>NOAA</u>	<u>National Oceanic and Atmospheric Administration</u>
O&M	operations and maintenance
PEIS	Programmatic Environmental Impact Statement
POW	place of work
PUD	Public Utilities District
ROD	Record of Decision
RRA	Reclamation Reform Act
SCPUD	Summit City Public Utilities District
SCSD	Shasta Community Services District
SCWA	Shasta County Water Agency
SDAPUD	Shasta Dam Area Public Utilities District
SDWA	Safe Drinking Water Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service