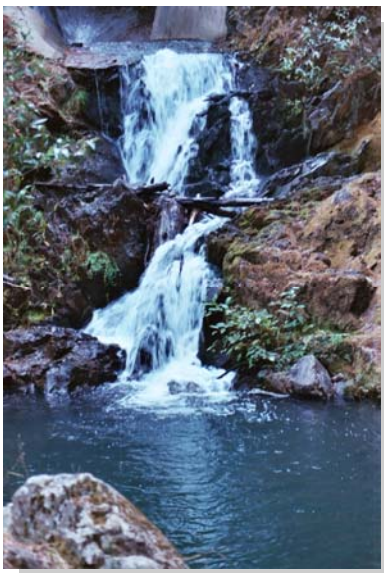
RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Long-Term Warren Act Contract with El Dorado Irrigation District

Pre-1914 Appropriative Water Rights and Weber Reservoir Water Right (License 2184)



U.S. Department of the Interior
Bureau of Reclamation

El Dorado Irrigation District

February 2008

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Draft Environmental Assessment

Long-Term Warren Act Contract with El Dorado Irrigation District

Pre-1914 Appropriative Water Rights and Weber Reservoir Water Right (License 2184)

Prepared by

Bureau of Reclamation
Mid-Pacific Region
Central California Area Office
7794 Folsom Dam Road
Folsom, California

El Dorado Irrigation District
2890 Mosquito Road
Placerville, California

U.S. Department of the Interior
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DRAFT ENVIRONMENTAL ASSESSMENT

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1.0 Introduction

The Bureau of Reclamation (Reclamation) proposes to enter into a long-term (40-year) Warren Act (WA) contract with the El Dorado Irrigation District (EID) to facilitate the delivery of up to 4,560 acre-feet (AF) per year of non-Project water through Folsom Reservoir for municipal and industrial (M&I) uses in the western portion of El Dorado County. The sources of the non-Project water fall into two categories: 1) pre-1914 appropriative water rights and 2) post-1914 rights licensed by the State Water Resources Control Board (SWRCB).

The first category is water that EID would otherwise be entitled to divert from Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch) under pre-1914 appropriative water rights. These three creeks are tributary to the South Fork of the American River upstream of Folsom Reservoir. EID proposes to forgo diversion at these ditches and allow water to flow downstream to Folsom Reservoir for diversion via EID's Folsom Lake Raw Water Pump Station (FLRWPS) on the south shore of Folsom Reservoir.

The second category of water to be conveyed under the proposed WA contract is water stored in and released from Weber Reservoir under a licensed, post-1914 water right (License 2184). These releases will allow EID to implement an Operational Agreement with the California Department of Fish and Game (DFG) that provides instream flows to benefit fish and wildlife resources in Weber Creek downstream of Weber Reservoir. The releases from Weber Reservoir will remain instream and ultimately end up in Folsom Reservoir for rediversion via EID's Folsom Lake Raw Water Pump Station on the south shore of Folsom Reservoir.

1.1 Purpose and Need for the Proposed Action

The purpose of executing the proposed WA contract is to allow for the conveyance of EID's water rights water through Folsom Reservoir. A WA contract is needed to: 1) help meet the existing need for additional water supplies in and around the El Dorado Hills area, 2) support EID's ongoing water supply planning and conservation activities, and 3) help EID facilitate the implementation of instream flow targets for Weber Creek as defined in the proposed Operations Agreement with the State of California and Memorandum of Understanding between and DFG.

To further describe the purpose and need for the proposed action, the following subsections are excerpted or summarized from *El Dorado Irrigation District's Proposal for Warren Act Contract for Diversion and Rediversion of Water at Folsom Lake - Pre-1914 Water Rights on Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch), and Rediversion of Water Released from Weber Reservoir Pursuant to SWRCB License No. 2184* (EID 2004).

1.1.1. Need for Additional Water Supplies in El Dorado Hills Area

There is a demonstrated need for additional water supplies to serve EID's greatest growth area in and around El Dorado Hills. EID's primary source of water supply for the El Dorado Hills area is a Central Valley Project (CVP) water service contract with Reclamation. This contract entitles EID to 7,550 AF per year from the CVP at Folsom Reservoir, but is subject to reductions for shortages in certain years. Although EID can and does deliver additional supplies to El Dorado Hills from other sources to the east, infrastructure constraints limit the amount of alternative, additional supplies that can be delivered. EID's 2003 potential potable water demand for the El Dorado Hills Region was approximately 9,400 acre feet, which means the CVP contract alone is insufficient to meet active, latent, and other system demands in this area. Growth projections show that even with no significant new land use approvals, actual residential and commercial demand will rise to approximately 15,860 acre feet annually by the year 2025.

EID and Reclamation entered into one-year WA contracts between 2001-2007 to allow EID to divert the pre-1914 appropriative water rights from Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch) at Folsom Reservoir. In addition, EID and Reclamation entered into one-year surplus "spill water" in 2002 and 2003 in accordance with section 215 of the Reclamation Reform Act of 1982 (43 U.S.C. 390oo).

EID has relied on temporary WA contracts and surplus water contracts to help meet the existing water supply needs. However, Reclamation's approval of temporary WA contracts in each future year is not assured due to potential increases in costs, changes in legislation or delegation of authority, and/or capacity constraints at Folsom Dam and Reservoir. In addition, temporary WA contracts also have priority constraints. For example, when capacity is available at the federal facilities, Reclamation delivers water first to CVP water service contractors, then to long-term WA contract holders, and lastly to temporary one-year WA contract holders (SSWD Draft EA, 2006). The proposed long-term WA contract would address these uncertainties associated with the temporary contracts and provide a long-term solution to help meet the existing water supply needs of EID.

1.1.2. Ongoing Water Supply Planning and Conservation Activities

A long-term Warren Act contract for diversion of ditch rights at Folsom Lake also represents a key element of EID's water supply planning and ongoing water conservation program. During the past several years, EID has connected existing ditch water users to EID's piped water system, which utilizes water from other sources within EID's water supply system. The purpose of connecting these customers to the piped water system is to allow EID to cease diversion from the creeks into the Summerfield Ditch system (Slab Creek), the Gold Hill Ditch system (Hangtown Creek) and the Farmers Free Ditch system (Weber Creek and Weber Reservoir). These three ditch systems were originally constructed in the

1800's, and conveyed water great distances from the Creeks to relatively small and dwindling user groups in El Dorado County.

Significant portions of the ditches are located in remote areas, and the ditches are expensive and difficult to access and maintain. There also are significant conveyance losses in these ditches resulting from evaporation and seepage. These losses reduce the amount of water available for other beneficial uses in the American River system. A long-term Warren Act contract allowing diversion of Creek flows at Folsom Lake would result in significant operation and maintenance cost savings to EID, and substantial water savings to EID and other water users from the American River watershed. Because the points of diversion would move downstream, and EID proposes to account for conveyance losses and any tailwater and return flows, no legal user of water or instream beneficial use will be injured.

1.1.3. Operations Agreement with the State of California and Memorandum of Understanding with the California Department of Fish and Game

A long-term Warren Act contract would also help facilitate the implementation of instream flow targets for Weber Creek. In September 2003, EID entered into an agreement with the State of California, acting through the California Attorney General's office, regarding the operations of Weber Reservoir (Operations Agreement). Contemporaneously, EID entered into a Memorandum of Understanding (MOU) with the California Department of Fish and Game (DFG), related to certain actions necessary to implement the Operations Agreement. Through the Operations Agreement and the MOU, EID has committed to maintain a minimum instream flow in Weber Creek downstream of Weber Reservoir and document inflow and instream flow releases with real-time measuring devices. A long-term Warren Act contract would help facilitate the implementation of instream flow targets for Weber Creek as defined in the proposed Operations Agreement. The Operations Agreement and MOU are included in Appendix B.

1.2 Scope of this Document

1.2.1. National Environmental Policy Act Compliance

The purpose of this document is to meet Reclamation's obligations pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] 4321 *et seq*.), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Departmental Manual (DM) 516 DM 1-7.

Reclamation is the Federal lead agency under NEPA for this proposed action and is responsible for the content and approval of this document. This document is an Environmental Assessment (EA) and is intended to identify the direct, indirect, and cumulative environmental impacts associated with the alternatives and to allow the responsible Federal official to determine whether to prepare a finding of no significant impact (FONSI) or an Environmental Impact Statement (EIS)" (Chapter 6, Reclamation NEPA Handbook, 2000). "The FONSI is a decision document based on evaluation of impacts in the EA and other factors" (Section 6.7.2 Reclamation NEPA Handbook, 2000).

1.2.2. Endangered Species Act Compliance

This document will also serve to meet Reclamation's obligations pursuant to Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. Section 1531 *et seq*.). This document will serve as a Biological Assessment (BA) as required under Section 7(c) of the ESA and is intended to provide an analysis of the potential effects of Reclamation's Proposed Action on listed and proposed species and designated and proposed critical habitat within the Action Area.

Reclamation and EID are coordinating with the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) and the Fish and Wildlife Service (FWS) to facilitate ESA compliance for the proposed action. This EA/BA will be provided to NOAA Fisheries and the FWS for their review and approval prior to implementing the Proposed Action.

A system-wide effects analysis for the Central Valley Project is currently being conducted in the Central Valley Project Operations Criteria and Plan (CVP-OCAP) through the ESA Section 7 consultation process. The analysis presented in this document represents the project level analysis of potential effects of the Proposed Action to listed species and designated critical habitat. The CVP-OCAP will provide a system-wide analysis of the cumulative effects of CVP operations to listed species and critical habitat. This contract will be included in the project description / proposed action for the CVP-OCAP. Therefore, the Proposed Action will not be implemented (i.e. the long-term WA contract will not be executed) until the CVP-OCAP process is complete and new Biological Opinions are issued from the Fish and Wildlife Service and NOAA Fisheries.

1.2.3. Related Reviews and Approvals

In addition to the Federal action, EID and the California State Water Resources Control Board (SWRCB) also have discretionary actions associated with this project. First, because EID is the project proponent, the EID Board of Directors will need to approve the Warren Act contract.

Second, in order for EID to receive stored water from Weber Reservoir under the proposed Warren Act contract, the SWRCB Division of Water Rights must approve EID's Petition for Change (pursuant to Water Code Section 1700) to add Folsom Reservoir as a point of rediversion and change the place and purpose of use under License 2184 for Weber Reservoir (Application 1692, Permit 1053). The SWRCB filed a Notice of Petition to Change Point of Diversion, Place of Use and Purpose of Use on January 28, 2005. The SWRCB approved the changes to License 2184 in Order WR 2007-0035-DWR on October 12, 2007 (Appendix C).

EID and SWRCB approval of this project requires environmental review in accordance with the California Environmental Quality Act (CEQA), Public Resources Code §21000-21177. EID is the Lead Agency in accordance with CEQA Guidelines §15051. The SWRCB is considered a Responsible Agency under CEQA. To meet these requirements, EID prepared an *Initial Study and Mitigated Negative Declaration for EID Relocation of Water Rights (EID Project #00006E)* in April 2005.

EID submitted an application package to Reclamation requesting a long-term Warren Act contract on May 11, 2004. This package included the main proposal titled *El Dorado Irrigation District's Proposal*

for Warren Act Contract for Diversion and Rediversion of Water at Folsom Lake - Pre-1914 Water Rights on Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch), and Rediversion of Water Released from Weber Reservoir Pursuant to SWRCB License No. 2184 (EID 2004).

Both of these documents provide a significant amount of background information regarding the proposed action. These documents are hereby incorporated by reference into this EA in an effort to "cut down on the bulk [of environmental documents] without impeding agency and public review of the action" (CEQ regulations section 1502.21). The incorporated material shall be cited in the text and its content briefly described.

1.3 Warren Act Contracts, Authority, and Public Review

The Federal action considered in this document is the execution of a Warren Act contract. "Warren Act contracts are generally agreements entered into to allow… [for] the storage or conveyance of non-project water, in Reclamation facilities" (Section 4.17 Reclamation NEPA Handbook, 2000). These contracts are entered into at times when Reclamation has conveyance or storage capacity in its facilities. The provisions of the contract help describe the Federal action and are incorporated into the project description/proposed action in the NEPA document.

The Warren Act of February 21, 1911 (43 U.S.C. §523) authorizes the United States to execute contracts for the conveyance and storage of non-Central Valley Project (non-Project) water in Federal facilities (e.g. Folsom Reservoir) when excess capacity exists. This proposed contract is also subject to the provisions of other applicable laws including the Act of June 17, 1902 (32 Stat. 388), as amended and supplemented; Section 305 of the Act of March 5, 1992 (106 Stat. 59); and Section 3408 of Title XXXIV of the Act of October 30, 1992, the Central Valley Project Improvement Act (106 Stat. 4728).

The draft contract has been negotiated between Reclamation and EID and is attached in Appendix A. The contract negotiation sessions are open to the public and the draft contract is subject to a 60-day public review and comment period.

2.0 Proposed Action and Alternatives

2.1 Proposed Action - Overview

The Proposed Action evaluated in this Environmental Assessment (EA) is the execution of a 40-year Warren Act (WA) contract between Reclamation and the El Dorado Irrigation District (EID) to facilitate the delivery of up to 4,560 acre-feet (AF) per year of non-Project water through Folsom Reservoir for municipal and industrial (M&I) uses in the western portion of El Dorado County. The proposed WA contract will allow EID to divert/redivert water at Folsom Reservoir that originates from four upstream sources and would otherwise be available for diversion by EID. The sources of the non-Project water fall into two categories: 1) pre-1914 appropriative water rights and 2) post-1914 rights licensed by the State Water Resources Control Board (SWRCB).

The first category is water that EID would otherwise be entitled to divert from Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch) under pre-1914 appropriative water rights. These three creeks are tributary to the South Fork of the American River upstream of Folsom Reservoir. EID proposes to forgo diversion at these ditches and allow water to flow downstream to Folsom Reservoir for diversion via EID's Folsom Lake Raw Water Pump Station on the south shore of Folsom Reservoir.

The second category of water to be conveyed under the proposed WA contract is water stored in and released from Weber Reservoir under a licensed, post-1914 water right (License 2184). These releases will allow EID to implement an Operational Agreement with the California Department of Fish and Game that provides instream flows to benefit fish and wildlife resources in Weber Creek downstream of Weber Reservoir. The releases from Weber Reservoir will remain instream and ultimately end up in Folsom Reservoir for rediversion via EID's Folsom Lake Raw Water Pump Station on the south shore of Folsom Reservoir.

The purposes of use for water delivered under the proposed WA contract will be municipal and industrial (M&I). The place of use for water delivered under the proposed WA contract will be EID's current federal service area as defined in the Central Valley Project water service contract #14-06-200-1357A-LTRI (Figure 1).

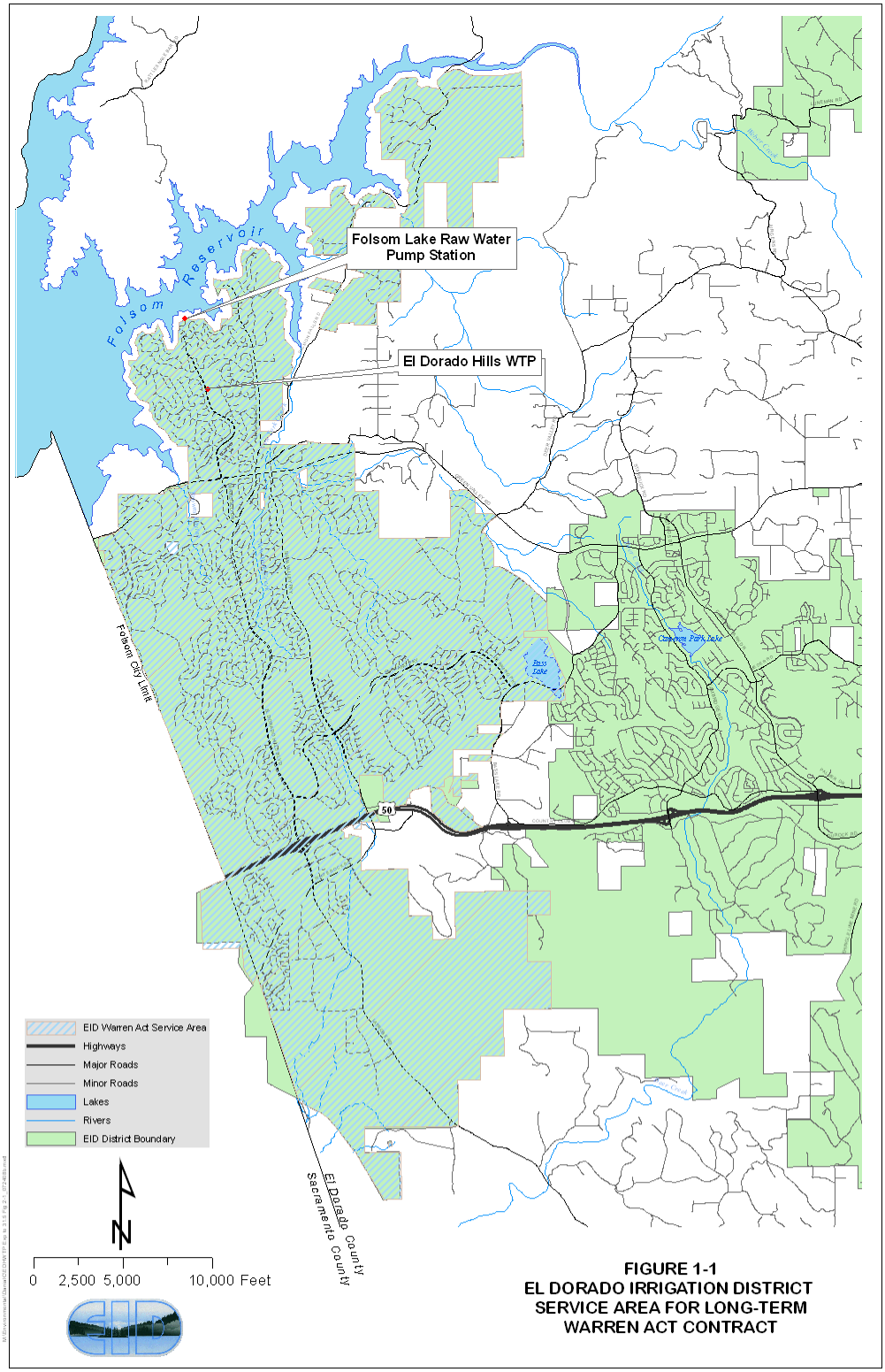

Figure 1. Proposed Service Area for the long-term Warren Act contract. The proposed Service Area is the same as EID's existing Service Area for CVP contract #14-06-200-1357A.

The Proposed Action includes measurement (i.e. stream gages) and monthly reporting of each source of water. Only water sources and quantities that are introduced into Folsom Reservoir will be available for delivery under the proposed WA contract.

The proposed action does not require any physical changes to EID's Folsom Lake Raw Water Pump Station diversion capacity or the El Dorado Hills Water Treatment Plant.

Figure 2 illustrates the conceptual layout with each water source, historic diversions, and current stream-gage locations.

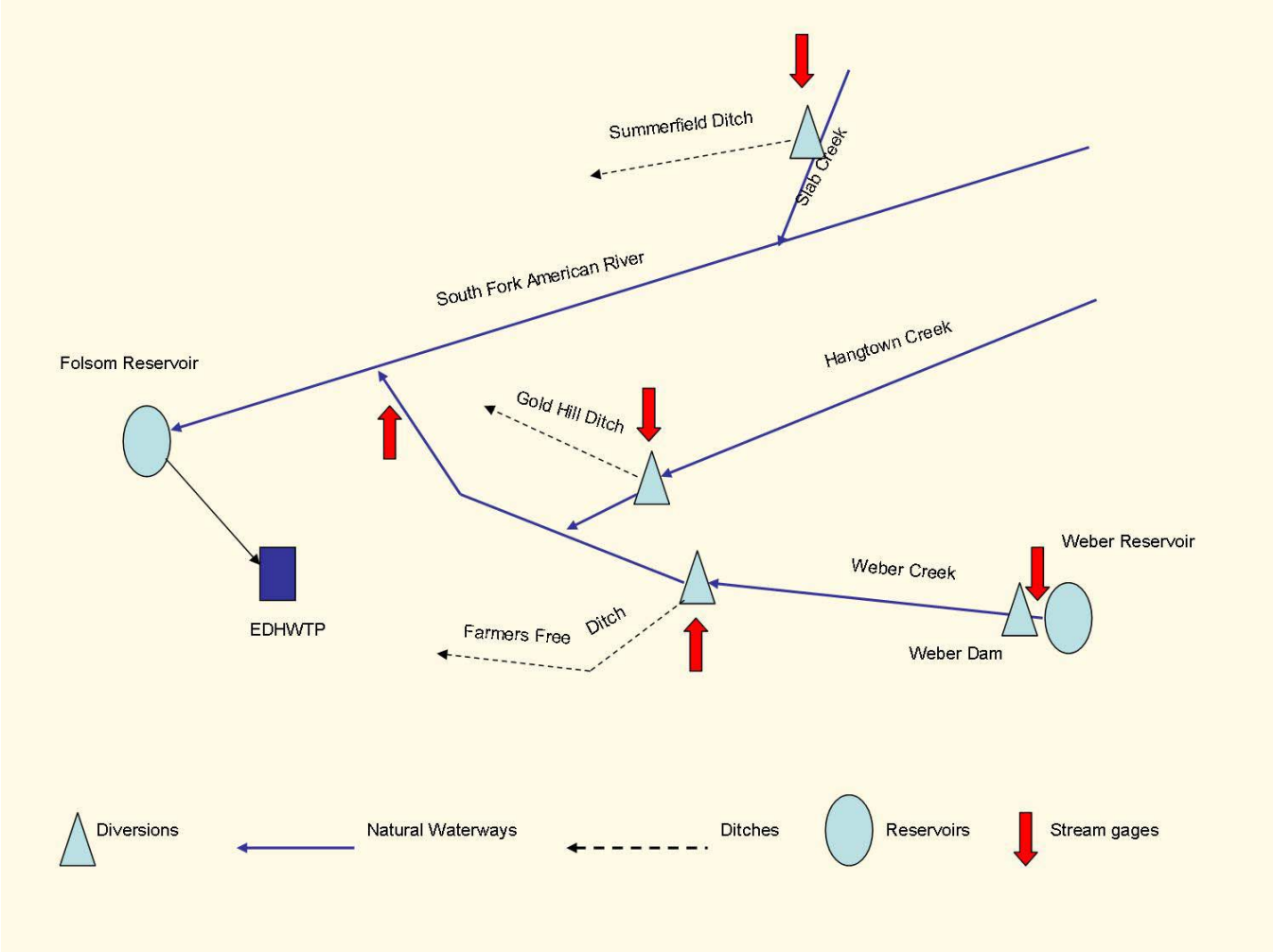

Figure 2. Project schematic identifying water sources, historic diversions, and stream gage locations.

2.1.1. Water Sources

This section describes specific information on operations, measurement, and reporting for each source of non-Project water. This information and additional background information on each source can be

found in *El Dorado Irrigation District's Proposal for Warren Act Contract for Diversion and Rediversion of Water at Folsom Lake - Pre-1914 Water Rights on Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch), and Rediversion of Water Released from Weber Reservoir Pursuant to SWRCB License No. 2184* (EID 2004).

Slab Creek (Summerfield Ditch)

Under the Proposed Action, EID would bypass all flow that was historically diverted into the Summerfield Ditch at Slab Creek. EID has installed a real-time measuring device in Slab Creek at or near the historic diversion to document flows. EID would commence diversion of Slab Creek flow at Folsom Lake on April 1 each year, at a rate of 10.2 cfs – i.e., 12 cfs less 15% for stream losses between the Summerfield Ditch and Folsom Reservoir. If the flow available for diversion at the Summerfield Ditch is less than 12 cfs, EID will divert at Folsom at a rate equal to 85% of the flow rate that is available for diversion at the Summerfield Ditch ("recoverable flow rate"). EID will continue to divert the recoverable flow rate until flow the flow rate available for diversion at the Summerfield Ditch is less than 4 cfs, at which point EID will cease diversion of Slab Creek flow at Folsom Reservoir.

Hangtown Creek (Gold Hill Ditch)

Under the Proposed Action, EID would bypass all natural Hangtown Creek flow that was historically diverted at the Gold Hill Ditch. EID has installed a real-time measuring device in Hangtown Creek at or near the historic diversion to document flows. EID proposes to divert this water, less stream losses, at its Folsom Lake pump station. EID would commence diversions of Hangtown Creek flow at Folsom Lake on or around June 15 each year, beginning at a rate of 4.25 cfs – i.e., 5 cfs less 15% for stream losses between the Gold Hill Ditch and Folsom Reservoir. As the flow diminishes, EID would continue to divert the recoverable flow rate (85% of the actual flow) through November 15.

Weber Creek (Farmers Free Ditch)

Under the Proposed Action, EID would bypass all natural flow that was historically diverted at the Farmers Free Ditch. EID has installed a real-time measuring device in Weber Creek at or near the historic diversion to document flows. EID would commence diversion of Weber Creek flow at Folsom Lake on or around June 15 of each year, at a rate of 3.4 cfs – i.e., 5 cfs, less one cfs for return flows near the Forni Road crossing (described above), less 15% for stream losses between the Farmers Free Ditch and Folsom Reservoir. If the flow available for diversion at the Farmers Free Ditch is less than 5 cfs, EID would divert at Folsom at a rate equal to 85% of the adjusted flow rate that is available for diversion at the Farmers Free Ditch ("recoverable flow rate"). EID would continue to divert the recoverable flow rate until November 15 of each year, at which point EID will cease diversion of Weber Creek flow at Folsom Reservoir.

Weber Reservoir

Under the Proposed Action, EID intends to release the minimum flows required in the Operations Plan, or such greater flows as may be required to deliver water for rediversion at Folsom Reservoir. The flow and storage measuring devices required in the Weber Reservoir Operations Agreement will allow EID and Reclamation to accurately determine the amount and timing of flow released from Weber Reservoir for rediversion at Folsom Reservoir. The installation of real-time measuring devices in and around Weber Reservoir will allow EID to accurately measure the amount of water that would otherwise be available for diversion from Weber Reservoir or rediversion at the Farmers Free Ditch. The timing and amount of water that EID will release from storage at Weber Reservoir will vary from year to year,

depending on the rate and timing of inflow. As noted above, EID has a pre-1914 water right to divert all natural flow in Weber Creek at the Farmers Free Ditch, up to 5 cfs, from April 1 to November 15 of each year. Water released from storage at Weber Reservoir is in addition to EID's pre-1914 water right at the Farmers Free Ditch. Weber Reservoir has a usable storage capacity of 1,045 acre feet, not including the dead pool storage of 80 af. The Weber Reservoir Operations Agreement requires EID to maintain a minimum of 200 af of usable storage in the late summer and fall so that a minimum of 1 cfs can be released from Weber Reservoir during those periods.

2.1.2. Water Measurement and Reporting

Stream Gages

Listed below are descriptions of the stream-gages used for the ditch diversions, which includes type of gage, quality assurance procedure, and reporting process. These gage locations are intended to validate conveyance loss estimates and demonstrate actual volumes of water introduced in Folsom Reservoir.

Slab Creek in Swansboro: **(**S-42) is a High Sierra Electronics recorder with a Druck pressure transducer that records the data every 15 minutes and is automatically transferred to an ACRO data logger. An EID employee visits the site once a month to change out the ACRO logger. It is then delivered to the hydrographer to be downloaded into a Surface Water Program and computed into cfs by reading the stage data collected and the rating table that has been developed over a period of time. Velocity measurements are taken during the water year to obtain the necessary measurements to calibrate the stage to discharge relationship.

Hangtown Creek in Placerville*:* (H-1) is an H-350/355 self-contained "smart" gas purge system that produces a precision, constant mass flow of gas. Together with a pressure measurement device, it is used to measure the stage of the stream. A built in recorder records the stage every 15 minutes. An EID employee visits the site once a month to download the recorded data to a PCMCIA disk that is delivered to the hydrographer to be downloaded into a Surface Water Program. EID is currently recording stage and using this data to estimate streamflow until enough measurements are taken to develop the rating table.

Weber Creek at Highway 49 Bridge*:* (W-4) is an H-350/355 self-contained "smart" gas purge system that produces a precision, constant mass flow of gas. Together with a pressure measurement device, it is used to measure the stage of the stream. A built in recorder records the stage every 15 minutes. An EID employee visits the site once a month to download the recorded data to a PCMCIA disk. It is then delivered to the hydrographer to be downloaded into a Surface Water Program and computed into volumetric discharge (cfs) by reading the stage data collected and the rating table that has been developed over a period of time. Water-velocity measurements are taken during the water year to obtain the necessary measurements to calibrate the stage to discharge relationship.

Weber Creek upstream of the South Fork American River Confluence*:* (W-5) is an H-350/355 self contained "smart" gas purge system which produces a precision, constant mass flow of gas. Together with a pressure measurement device, it is used to measure the stage of the stream. A built in recorder records the stage every 15 minutes. An EID employee visits the site once a month to download the recorded data to a PCMCIA disk. It is then delivered to the hydrographer to be downloaded into a Surface Water Program and computed into cfs by reading the stage data collected and the rating table

that has been developed over a period of time. Velocity measurements are taken during the water year to obtain the necessary measurements to calibrate the stage to discharge relationship.

Gage Repair and Upgrades

The equipment described above illustrates existing installation at each gage location. During the length of the proposed WA Contract, installations may change due to equipment failure or technological improvements. A trained hydrographer will make any modifications to gage-stations in accordance with industry standards. EID will maintain backup equipment to complete timely repairs or replacements as necessary during the diversion season to minimize data loss.

2.2 No Action Alternative

The No Action Alternative would involve no change to instream flows in Weber Creek, Slab Creek and Hangtown Creek. Water within these creeks would continue to flow downstream into Folsom Reservoir. EID would not be able to divert the water from Folsom Reservoir, hindering EID's mission and fiduciary obligations as a water agency in the use of these long-standing water rights. The Farmers Free, Summerfield and Gold Hill ditches would remain dry, as in the Proposed Action alternative.

Existing minimum instream flow policies would remain in effect for Weber Reservoir and Weber Creek. Implementation of important provisions of the MOU with CDFG to increase the minimum flows from Weber Reservoir into Weber Creek would not occur. This agreement is not part of the existing condition and is contingent on approval by the SWRCB of the requested changes to EID's licensed water right and execution of a long-term Warren Act contract.

The environmental benefits of the Weber Creek Flow and Restoration Plan would not be realized if EID could not provide for the permanent higher instream flow from Weber Reservoir to Weber Creek by fully implementing the MOU. The No Project Alternative could result in an adverse environmental effect from failure to guarantee continued higher instream flows by permanently conveying EID's pre-1914 water rights downstream to Folsom Lake for rediversion.

EID may continue to request temporary one-year Warren Act contracts for each of the pre-1914 and Weber Reservoir appropriative water rights.

3.0 Affected Environment and Environmental Consequences

3.1 Introduction

This section describes the affected environment (i.e. existing condition) and identifies environmental consequences (i.e. potential impacts) for the Proposed Action and the No Action Alternative. Resources

and issues analyzed in this EA were identified through a review of NEPA guidance documents and through scoping with Reclamation and EID staff. The resources and issues described in this chapter are:

- Water Supply and Hydrology
- Facility Operations
- Land Use
- Biological Resources
- Indian Trust Assets
- Cultural Resources
- Climate Change

This EA considers the direct, indirect, and cumulative effects for each of these resource categories. This EA does not analyze resources for which it would be reasonable to assume that impacts do not occur. Specifically, potential effects to water quality, recreation, air quality, soils, visual resources, transportation, noise, hazards and hazardous materials, public services, non-water utilities and service systems, and socio-economics are not analyzed because they were not identified as potential issues during scoping and it would not be reasonable to assume that the proposed WA contract could result in any potential changes to these resources or services.

3.2 Water Supply and Hydrology

This section describes the existing condition and potential impacts to water supply and hydrology for the four sources of water considered in the Proposed Action. Impacts to Folsom Reservoir and coldwater pool resources are discussed in Section 3.3 Facilities and Operations.

The analysis of potential effects on water supply and hydrology associated with implementation of the Proposed Action was qualitatively assessed based on potential changes in instream flow.

The following subsections provide additional information for each source of water. This is excerpted or summarized from *El Dorado Irrigation District's Proposal for Warren Act Contract for Diversion and Rediversion of Water at Folsom Lake - Pre-1914 Water Rights on Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers Free Ditch), and Rediversion of Water Released from Weber Reservoir Pursuant to SWRCB License No. 2184* (EID 2004).

Slab Creek and the Summerfield Ditch

This diversion is documented in Statement of Water Diversion and Use No. 14323 (S-14323), on file with the SWRCB. The diversion is out of the west side of Slab Creek, into the mouth of the Summerfield Ditch, in a remote area of Forest Service land in Section 28, Township 12 North, Range 12 East, Mount Diablo Baseline and Meridian.

Prior to the 1999 diversion season, annual diversions at the Summerfield Ditch typically began on March 1, at a rate of 12 cubic feet per second (cfs). For approximately a month, these diversions would be used to "charge" the 21.7-mile ditch to prepare it for deliveries, which commenced April 1. Water

conveyed through the ditch before April 1 was used to fill Finnon Reservoir, which is the terminus of the ditch.

Diversions continued at 12 cfs until flows in Slab Creek receded to less than that amount; diversions were then gradually reduced, capturing all available flows, until the diversion rate reached approximately 7 cfs. When water available for diversion was less than 7 cfs, deliveries to the lower end of the ditch would cease, but EID would continue to divert and deliver water to upper-ditch customers until creek flows diminished to 4 cfs. At that point, EID would cease diversions for the year and allow all flow to remain in Slab Creek. Under these operations, diversions typically diminished to between 6 and 8 cfs by July 15, then continued to diminish until they stabilized at about 5 cfs through the remainder of the summer months. Historically, diversions typically ceased entirely in September or October, when the creek flows dropped to 4 cfs. In drier years, diversions ceased as early as August 1.

The first mile of the Summerfield Ditch, beyond the point of diversion, is piped with a 15-inch PVC pipe. The remainder of the ditch is a combination of unlined earthen ditch, and piped segments (which over time replaced leaky, sinuous, or failure-prone reaches). The ditch capacity lessens over its 21-mile length, with a maximum delivery capacity of 0.50 cfs at the terminus at Finnon Reservoir (approximate capacity 320 acre-feet).

Water diverted from Slab Creek was used for irrigation and non-potable domestic uses in the Mosquito Community, and also was used to fill Finnon Reservoir. From 1854 to 1968, customers used the water for mining, irrigation, domestic, and other uses. After 1968, customers used the water for irrigation and non-domestic uses. Typical uses included permanent fruit and vine crops, irrigated pasture, stock watering, and fishing/recreation.

Because the ditch terminates at Finnon Reservoir, the only tailwater returning to the South Fork American River spills from Finnon. Finnon would not spill in every year, and even in spill years, spills were intermittent. Because local runoff to Finnon is negligible, and the capacity of the ditch into Finnon is 0.50 cfs, maximum spills, when they did occur, were at a rate of 0.50 cfs or less. If they occurred at all, spills never occurred after July 15 and generally ended before that date.

Although Summerfield Ditch experienced high conveyance losses, those losses did not return to the South Fork except in small amounts. The entire first mile of the ditch is piped, with no measurable conveyance losses. The Ditch alignment diverges from the Slab Creek channel both laterally and vertically during that mile. Conveyance losses evaporated, were consumed by phreatophytes (much of the upper Ditch runs through densely wooded forest), or ran into the ground. There was never noticeable runoff below the ditch to Slab Creek, except some seepage at Deer View, Long Canyon, and a few other places.

The linear distance along the Ditch between the point of diversion on Slab Creek and Finnon Reservoir is approximately 21.7 miles. As a result of EID's system-wide water conservation program, EID has not diverted at the headworks of the Summerfield Ditch since the end of the 1998 irrigation season. The only exception to this statement is that in 2003, in conjunction with its short-term Warren Act contract, EID diverted water at the headworks and measured the diversions with a real-time, USGS-standard measuring device, turned the water back into Slab Creek about 100 yards downstream, then measured total streamflow with another real-time, USGS-standard measuring device. The purpose of this

operation was to generate real data to substantiate the diversions and supplement synthetic hydrological data previously generated to quantify the water right. After 1998 and until 2003, EID continued to maintain and use the last three miles of the Ditch to convey water from an EID well to some customers. EID currently supplies water to all former users along the Summerfield Ditch (except Finnon Reservoir) through EID's piped water system.

Hangtown Creek and the Gold Hill Ditch

This diversion is documented in Statement of Water Diversion and Use No. 14967 (S-14967), on file with the SWRCB. Prior to the 1999 diversion season, annual diversions from Hangtown Creek at the Gold Hill Ditch typically commenced in May, with the first deliveries on May 15. Total diversions were 15 cfs, made up of a combination of natural flows in Hangtown Creek and supplemental flows released into Hangtown Creek from EID's Main Ditch. The Main Ditch is supplied, in turn, by water diverted from the South Fork American River watershed through Project 184 facilities under pre-1914 rights. The proposal described herein does not contemplate changing the point of diversion of any pre-1914 Project 184 water rights to Folsom Lake.

At the beginning of the season, Hangtown Creek's natural flow is typically 5 cfs, diminishing rapidly to 1 cfs by mid-June and 0.50 cfs by July 1. Hangtown Creek natural flows then stabilize and hold at about that rate through the October 15 conclusion of the irrigation season.

Gold Hill was and remains primarily an agricultural district. Ditch customers used the water to irrigate permanent crops such as orchards and vineyards, to irrigate annual crops such as hay, to irrigate pasture, and for stock- and general-use ponds, as well as for non-potable domestic purposes.

Gold Hill Ditch runs for a length of 4.5 miles. Near its terminus, it diverges into two branches. One branch terminates in ponds at Graham Ranch; the other in ponds on the Winje Ranch. Each ranch used the stored water for onsite pasture and orchard irrigation. Thus, there are no appreciable tailwater return flows to the South Fork American River.

Immediately below the diversion headworks, the diverted water enters a 700-foot siphon that initially parallels Hangtown Creek, and then diverges to the north, crossing U.S. Highway 50 and Placerville Drive. The remainder of the facility is a combination of unlined earthen ditch and piped segments where seepage was significant. Aside from seepage estimated at one to two miner's inches (0.025-0.05 cfs) near Sleepy Hollow Road, conveyance losses did not return to Hangtown Creek or other South Fork tributaries; they evaporated, were taken up by phreatophytes or percolated into the ground. Thus, return flows from this ditch were negligible.

As a result of EID's system-wide water conservation program, diversions at the Gold Hill Ditch have not occurred since the end of the 1998 irrigation system, although portions of the ditch were used until 2000 to deliver water released from EID's piped system for certain customers. EID currently supplies water to the water users along the Gold Hill Ditch through EID's piped water system.

Weber Creek and the Farmers Free Ditch

This diversion is documented in Statement of Water Diversion and Use No. 14968 (S-14968), on file with the SWRCB. The diversion point for the Ditch is on the south side of Weber Creek, about 100 yards upstream of the Highway 49 bridge crossing.

Prior to the 2001diversion season, annual diversions at the Farmers Free Ditch typically commenced in May, with the first customer deliveries on May 15. The initial diversion rate at the head of the Ditch was typically 7 cfs, as limited by 12-inch PVC pipe in numerous sections of the Ditch. By July 1, Weber Reservoir upstream typically ceased to spill and diversions into the Ditch would continue at approximately 5 cfs, composed of a combination of Weber Creek natural flow (including substantial accretions below Weber Dam) and stored releases from Weber Reservoir. Approximately 0.5 cfs was bypassed voluntarily to maintain aquatic habitat downstream of the Ditch. Water deliveries continued to Ditch customers until October 15.

Water diverted from Weber Creek at the Farmers Free Ditch was used for irrigation and non-potable domestic uses. Water was pumped or diverted by Ditch customers along the 5.5-mile Ditch. Overall, approximately one-third of the Ditch is piped; the rest is unlined earthen canal. Aside from 100 feet of open canal at the headworks, the first 3,000 feet is piped. This Ditch, however, closely parallels Weber Creek for about two miles below the diversion. Just downstream of where Forni Road crosses both the Ditch and Weber Creek, the Ditch had substantial leakage (approaching 1 cfs) that returned to Weber Creek. Aside from this, conveyance losses were largely attributable to evaporation, and to seepage that did not result in return flow.

Below Forni Road, the Ditch diverges from Weber Creek and terminates in ponds located at the Sweeney Ranch, where the water was used for stock watering and to irrigate pasture. Later, these ponds became recreational amenities for a residential subdivision of the Sweeney Ranch. Therefore, no tailwater returned to the South Fork American River system. As its name implies, the Ditch served agricultural users, who employed it to irrigate pasture, permanent orchards, and annual crops, for stock watering, and for non-potable domestic purposes.

As a result of EID's system-wide water conservation program, the Ditch diversions have ceased in recent years; since July 31, 2000, EID has supplied water to the water users along the Farmers Free Ditch through EID's piped water system.

Weber Reservoir

EID currently diverts Weber Creek flows to storage at Weber Reservoir pursuant to SWRCB License No. 2184. In 1996, EID began a process to retrofit Weber Dam pursuant to orders from the California Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC). This work was completed in January 2002, subsequent to the time that EID converted the Farmers Free Ditch customers to the piped water system as part of EID's comprehensive water conservation program. EID therefore has most recently been operating Weber Reservoir for the benefit of fish and wildlife in Weber Creek.

SWRCB License No. 2184 allows EID to divert to storage up to 1,125 acre-feet per annum during the period extending from October 15 to May 15 of the following year. The authorized purpose of use is irrigation and incidental power (EID surrendered its power license in 1999), and the authorized place of use includes EID's service area as it existed in 1927 (this area does not include EID's El Dorado Hills service region).

Under EID's historical operations, water diverted to storage at Weber Reservoir during the winter and early spring of each year was later released and used to augment natural flows in Weber Creek for diversion at the Farmers Free Ditch.

In September 2003, EID entered into an agreement with the State of California, acting through the California Attorney General's office, regarding the operations of Weber Reservoir ("Operations Agreement"). Contemporaneously, EID entered into a Memorandum of Understanding (MOU) with the California Department of Fish and Game, related to certain actions necessary to implement the Operations Agreement. Through the Operations Agreement and the MOU, EID has committed to maintain a minimum instream flow in Weber Creek downstream of Weber Reservoir. The minimum instream flow is calculated based on inflow to Weber Reservoir. Inflow and instream flow releases will be documented with real-time measuring devices scheduled for installation in 2004.

The Operations Agreement contemplates rediversion of Weber Reservoir releases at EID's Folsom Lake pump station. The parties to the Operations Agreement recognized that, because Weber Reservoir must be operated consistent with SWRCB License No. 2184, a Change Order from the SWRCB would be required to (1) add Folsom Lake as an authorized point of rediversion; (2) add fish, wildlife, recreation, municipal and industrial uses as authorized purposes of use; and (3) add the place of use of EID's existing USBR water service contract 14-06-200-1357-LTRI as an authorized place of use. The instream flow elements specified in the Operations Agreement are conditioned upon approval by the SWRCB. EID filed its Change Petition with the SWRCB in April 2005. The SWRCB approved the changes to License 2184 in Order WR 2007-0035-DWR on October 12, 2007 (Appendix C).

Environmental Consequences

Proposed Action: Implementation of the Proposed Action does not change current hydrology for the three pre-1914 appropriative water rights, relative to the No Action alternative. EID has not used the historical diversions or ditches in the last several diversion seasons. EID will continue to forego diversions at Farmers Free Ditch on Weber Creek, Summerfield Ditch on Slab Creek, and Gold Hill Ditch at Hangtown Creek. Water within these creeks would continue to flow downstream into Folsom Reservoir for diversion at EID's FLRWPS. Implementation of the Proposed Action will allow EID to implement provisions of the MOU with DFG to increase the minimum instream flows from Weber Reservoir into Weber Creek.

Implementation of the Proposed Action does not change EID's overall water supplies. Water conveyed under the Proposed Action was historically diverted from the system at each ditch. Implementation of the Proposed Action merely shifts the usage from to western El Dorado County, where the majority of water supply demand exists.

No Action: Implementation of the No Action alternative does not change current hydrology in Weber Creek, Slab Creek, or Hangtown Creek below their respective diversions. Water within these creeks would continue to flow downstream into Folsom Reservoir. The Farmers Free, Summerfield and Gold Hill ditches would remain dry, as in the Proposed Action. Existing minimum instream flow policies would remain in effect for Weber Reservoir and Weber Creek. Full implementation of the MOU with DFG to increase the minimum flows from Weber Reservoir into Weber Creek would not occur.

Cumulative Effects

The Proposed Action, when added to other past, present, and reasonably foreseeable future actions, does not result in cumulative effects to water supply or hydrology. There are no cumulative effects to water supply or hydrology because the Proposed Action is contingent on yearly hydrologic conditions. Only water that is measured and demonstrated is made available into Folsom Reservoir is available for diversion at EID's FLRWPS. EID is required to submit a proposed diversion schedule each water year (updated monthly) and verify the availability of water from each source with instream gage data. This schedule is subject to revision if dry hydrology provides insufficient instream flows to be measured.

Conclusions

Implementation of the Proposed Action, relative to the to the No Action alternative, would result in no adverse direct, indirect, or cumulative effects for Weber Creek, Hangtown Creek, or Slab Creek because instream flows would remain the same. There would be some beneficial direct effects for Weber Creek with implementation of the Proposed Action because the Operations Agreement between EID and DFG would be executed and minimum instream flows provided below Weber Reservoir. Therefore, implementation of the Proposed Action, relative to the No Action alternative would result in no adverse impacts and provide minor beneficial effects to water supply and hydrology.

3.3 Facilities and Operations

This section describes the existing condition and potential impacts to facilities and operations involved in the conveyance and delivery of water for the Proposed Action. These facilities include Folsom Reservoir (i.e. Federal facility through which water is conveyed) and the Folsom Lake Raw Water Pump Station (EID's point of diversion). For Folsom Reservoir, a quantitative assessment is provided to describe potential changes in coldwater pool (CWP) volume with implementation of the Proposed Action (Appendix D: Technical Memorandum – Potential Effect of Diversions on Folsom Reservoir Cold Water Pool).

3.3.1 Folsom Dam and Reservoir

Folsom Reservoir is the Federal facility that will be used to convey water under the proposed WA contract. Federal facilities at Folsom Dam will not be used to deliver water under this WA contract. EID operates its own facility, the Folsom Lake Raw Water Pump Station (FLRWPS), which is located on the southern shore of Folsom Reservoir in El Dorado Hills.

Folsom Reservoir is an approximately 977,000 acre-foot multipurpose reservoir. Strong thermal stratification occurs annually in the reservoir between April and November. This establishes a warm surface water layer and a bottom coldwater layer (i.e. coldwater pool) within the reservoir. Management of Folsom Reservoir's coldwater pool (CWP) is important to lower American River fall-run Chinook salmon and Central Valley steelhead. Seasonal releases from Folsom's coldwater pool are managed, to the extent possible, to provide suitable thermal conditions in the lower American River for both fall-run Chinook salmon and Central Valley steelhead. However, Folsom Reservoir's CWP volume is often not sufficient to facilitate both coldwater releases during the warmest months for over-summering juvenile steelhead rearing, and coldwater releases during October and November for fall-run Chinook salmon immigration, spawning, and embryo incubation. Consequently, management of the reservoir's CWP is essential to providing suitable water temperatures for both fall-run Chinook salmon and steelhead.

Environmental Consequences

Proposed Action: An analysis was conducted to evaluate potential impacts to Folsom Reservoir's CWP with implementation of the Proposed Action (Appendix D: Technical Memorandum – Potential Effect of Diversions on Folsom Reservoir Cold Water Pool). In order to evaluate the potential for the project to cause an impact, this analysis estimates the change in volume of the CWP. For this analysis, water temperatures below 60 °F are considered part of the CWP in Folsom Reservoir. This volume will then be used to estimate a new water temperature at the centerline of the penstocks as an indicator of the potential effect on river outlet use at the end of September. A second analysis then estimates an equivalent number of days release for the volume change to the CWP as an indicator of potential impact to operations at Folsom Reservoir (Appendix D, Analysis Procedure, Page 3).

This analysis used temperature profile data collected at six locations in Folsom Reservoir from 2002 to 2006. One temperature profile location is on the South Fork arm of the American River just upstream of EID's water supply intake structure. This temperature profile data allowed CWP volume of Folsom Reservoir to be estimated on October 1 for each year 2002-2006.

The Proposed Action will alter the volume of inflow into Folsom Reservoir. Because historic upstream diversions are no longer being removed from the system, inflow to Folsom Reservoir under the Proposed Action increases. If this water is below 60 degrees, it could contribute to the volume of the CWP. The analysis shows that in each year from 2002-2006, the total volume of inflows below 60 degrees that would have historically been available for upstream diversion was 1409 AF (Appendix D, Table 3, Page 5).

The Proposed Action may also increase the withdrawal of water from the CWP (i.e. water below 60 degrees). EID's water supply intake structure can withdrawal from two elevations: 318.5 and 350 mean sea level (msl). These elevations were used in conjunction with reservoir temperature profile data to compute water temperatures at EID's point of diversion. The estimated additional diversion from the CWP ranged from 3419 AF – 4379 between 2002 and 2006 (Appendix D, Table 5, Page 8).

The potential effect to Folsom Reservoir CWP was then calculated by subtracting the increase in the CWP from the reduction in CWP. These net changes in CWP volume (all reductions) ranged from 2,009 AF to 2,969 AF (Appendix D, Table 6, page 8). The gross CWP volume ranged from 26,349 AF to 145,999 AF (Appendix D, Table 7, page 8).

These reductions in CWP volume were then subtracted from the CWP volume estimates for 2002-2006 (estimates obtained from summing the amount of water less than 60 degrees using the temperature profile data on Oct 1 of each year). These CWP volumes (Appendix D, Table 7, page 8) were then used to estimate changes in water temperatures at the centerline of the penstocks. The range of estimated temperature changes was 0.0 – 0.6 degrees F (Appendix D, Table 8, page 9). Changes less than 0.3 degrees F are considered to be within the resolution of the temperature measurement and are therefore are not considered a potential impact. In 2002, the change was 0.6 degrees which is only slightly above the resolution of the temperature measurements.

In order to translate this temperature change and CWP volume changes into an equivalent number of days of release at 1500 cfs. This would provide a metric that is meaningful in terms of operations. For example, a decrease in CWP volume may mean temperature shutters are moved earlier. In order to establish whether an impact is potentially detrimental to operations, Reclamation established that any change in CWP volume that would translate to 4 or more days release at 1500 cfs would be considered an adverse impact on operations. The range of equivalent days for each CWP change ranged from 0.7 – 1.7 days release at 1500 cfs (Appendix D, Table 10, page 10). Because 1.7 days is less than the established 4 days considered to impact operations, the Proposed Action will likely not have any impacts to Folsom operations.

No Action: Implementation of the No Action alternative has no impacts to the volume of the coldwater pool in Folsom Reservoir. The pre-1914 appropriative rights water diversions have already ceased at the historic diversion locations and currently flow downstream into Folsom Reservoir. EID may pursue alternative actions to divert water upstream of Folsom Reservoir.

Cumulative Effects

The Proposed Action, when added to other past, present, and reasonably foreseeable future actions, may result in cumulative effects to Folsom Dam and Reservoir operations. Implementation of the Proposed Action may affect Reclamation's ability to meet downstream fisheries requirements for steelhead and Chinook salmon in the lower American River.

Conclusions

Implementation of the Proposed Action may result in direct impacts to the volume of Folsom Reservoir's CWP. However, the analysis provided in Appendix D indicates that only minor changes in CWP volume would result with implementation of the Proposed Action, relative to the No Action alternative. These minor changes (i.e. decreased CWP volume) would likely not change CWP management or Folsom operations and therefore not have an adverse affect on Reclamation's ability to meet downstream fisheries requirements. There are no direct effects to the Folsom pumping plant or M&I intake structure because EID's point of diversion is the FLRWPS, which is located on the southern shore of Folsom Reservoir in El Dorado Hills.

There are no indirect effects to Folsom Dam and Reservoir associated with the Proposed Action.

The potential cumulative effects of the Proposed Action may affect Reclamation's ability to meet downstream fisheries requirements for steelhead and Chinook salmon in the lower American River. Operation of Folsom Dam dictates instream flow and temperature conditions in the lower American River. A system-wide analysis for the Central Valley Project is currently being considered in the Central Valley Project Operations Criteria and Plan (CVP-OCAP) through the ESA Section 7 consultation process. The Proposed Action will not be implemented (i.e. the WA contract will not be executed) until the CVP-OCAP process is complete and new Biological Opinions are issued from the Fish and Wildlife Service and NOAA Fisheries. In addition, based on the analysis provided in Appendix D, implementation of the Proposed Action would not surpass the threshold considered to adversely impact Folsom operations. Therefore, the potential cumulative effects of the Proposed Action on Folsom operations in the context of the CVP will be addressed prior to implementation of the Proposed Action.

3.3.2 EID's Folsom Reservoir Intake – El Dorado Hills Raw Water Pump Station

EID's Folsom Lake Raw Water Pump Station (FLRWPS) is located on the shores of Folsom Reservoir in El Dorado Hills. The pump station delivers raw water to the El Dorado Hills Water Treatment Plant (EDHWTP) located approximately 1 mile south of the pump station. The FLRWPS is the proposed point of diversion for the proposed WA contract. EID's FLRWPS currently has some capability to draw water from the warmer water pool and conserve the coldwater pool for the benefit of fisheries downstream of Folsom Dam. This existing pump system can accommodate the volume of water associated with the Proposed Action. A larger Temperature Control Device (TCD) is currently being planned to enable pumping and minimize impacts to the coldwater pool for all future EID water allocations.

The FLRWPS consists of five submersible pumps, each housed at the bottom of 18-inch and 20-inch steel casings that extend down the embankment of Folsom Lake. In addition, four booster pumps are located on the site to boost the water to the EDHWTP via a 30-inch pipeline. The pump station has the capacity to pump a maximum flow rate of 16 million gallons per day, or a constant average rate of approximately 24.7 cfs. The pump station also includes a building to house the booster pumps, electrical control equipment and instrumentation.

The FLRWPS and EDHWTP are currently being expanded to a capacity of 19.5 mgd, or a constant average rate of approximately 31 cfs, by replacing and upsizing several raw water and finished water pumps.

The current 16 mgd capacity is sufficient to meet existing El Dorado Hills peak demands from EID's 7,550 acre-foot per year water supply contracts and other sources, such as the surplus water contracts and Warren Act Contracts entered into between 2001 and 2007. The 19.5 mgd capacity available will provide sufficient capability for this proposed WA contract, the existing water service contract, and a portion of the Permit 21112 water supply for which EID is separately seeking a Warren Act contract.

Environmental Consequences

Proposed Action: Implementation of the Proposed Action does not require any physical changes to EID's FLRWPS diversion capacity or the EDHWTP. Therefore, there are no direct, indirect, or cumulative impacts on the point of diversion facilities and operations with implementation of the proposed action.

No Action: Implementation of the No Action alternative does not require any physical changes to EID's FLRWPS diversion capacity or the EDHWTP. Therefore, there are no direct, indirect, or cumulative impacts on the point of diversion facilities and operations with implementation of the No Action Alternative.

Cumulative Effects

As described above, the Proposed Action, when added to other past, present, and reasonably foreseeable future actions, does result in cumulative effects to EID's Folsom Reservoir intake structure or its water treatment facility because no physical changes are required to take delivery of this water.

Conclusions

Implementation of the Proposed Action, relative to the No Action alternative, would result in no direct, indirect, or cumulative effects because no new facilities are required to deliver the proposed water supply. No construction would be required at the FLRWPS or EDHWTP, as the increased amount of water can be diverted within the existing capacity of the pump station and EDHWTP. Similarly, no new or expanded facilities are required to divert and treat this additional water; the Project would rely exclusively on existing facilities, and does not require or contemplate construction activities, grading or excavation.

3.4 Land Use

This section describes the existing conditions and potential impacts on land use in El Dorado County that would result from implementation of the Proposed Action. Current El Dorado County land use policies as prescribed in the El Dorado County General Plan (EDC 2004) are discussed. This section also provides an assessment of past and future growth projections based on the 2004 General Plan and EID water meter approvals in the proposed Service Area.

The area affected by the Proposed Action is illustrated in Figure 1. This area encompasses the community of El Dorado Hills, and is generally bounded on the north by Folsom Reservoir, on the east by an elevation that approximates the upper end of Bass Lake Grade, on the south by Deer Creek and an El Dorado Joint Union High School District school site, and on the west by the El Dorado County/Sacramento County line except that a small portion of the service area extends into Sacramento County. Bass Lake is just inside the eastern boundary of the area. Implementation of the Proposed Action would not require any physical changes to EID's EDHWTP or FLRWPS.

Due to the topography within EID's service area and EID's existing infrastructure development, water from Folsom Reservoir cannot be conveyed to portions of the District outside the El Dorado Hills service area. Consequently, the water supplies of portions of the District outside the proposed service area would not be affected by the Proposed Action. The Proposed Action would provide the water supplies necessary to support the projected El Dorado Hills growth outlined in the 2004 General Plan.

EID plans its water supply and distribution system capital improvement projects in accordance with provisions of General Plan and existing County land use approvals. EID's infrastructure and the delivery of water using that infrastructure are consistent with the projected demands by future development under the 2004 General Plan.

El Dorado Hills is a suburban community that stretches along El Dorado Hills Boulevard and Latrobe Road, east of the Sacramento County line in El Dorado County. As its name implies, the proposed service area is characterized by relatively low-density, suburban-style development built on a hilly landscape. As is typical of this style of development, curvilinear local streets feed major collector roads such as Sophia Parkway and Serrano Parkway that funnel traffic to El Dorado Hills Boulevard and eventually State Route (SR) 50. Residential development is predominantly single-family laid out in planned subdivision tracts. Outside these subdivisions, development is very low density, and open oak woodlands and pastures dominate the landscape. There is a golf course and a number of public parks within the proposed service area. Existing commercial development is located near the intersection of

SR 50 and El Dorado Hills Boulevard/Latrobe Road. Light industrial development is present along Latrobe Road.

The El Dorado County General Plan provides a convenient view of existing and future land uses within the proposed service area. Pursuant to California law, the County General Plan establishes the future pattern of development and conservation areas within the county (Government Code Section 65300 et seq.). The general plan is considered the County's "constitution" for land use, and the County's zoning, subdivision, and capital improvement actions must be consistent with the objectives and policies of the general plan. The El Dorado County General Plan is based on a 20-year planning horizon, reaching to 2025.

A large portion of the proposed service area is within the El Dorado Hills Specific Plan area. The County General Plan incorporates the policies and land use map of this Specific Plan by reference. This Specific Plan is the basis for much of the existing development in El Dorado Hills.

Those portions of the proposed service area outside the Specific Plan area are assigned a variety of land use classifications under the County General Plan including (but not limited to) High-Density Residential (HDR)—single-family residential at one to five dwellings per acre); Medium-Density Residential (MDR)—single-family residential at not more than one dwelling per acre); Low-Density Residential (LDR)—single-family residential at not more than one dwelling per 5 acres); Rural Residential (RR)—single-family residential at not more than one dwelling per 10 acres); Commercial (C)—full range of commercial uses); Public Facilities (PF)—publicly owned lands and facilities); and Industrial (I)—full range of light and heavy industrial uses. The MDR and LDR land use designations are applied to sites that are not served by infrastructure or that serve as a transition from community areas to rural lands. The RR designation is applied to lands with limited public services with physical constraints. The I land use designation has been applied to lands along Latrobe Road south of SR 50 and most other existing development within El Dorado Hills.

Because El Dorado Hills is a relatively new community and is intended to be developed at low residential densities, there is little potential for increasing density or redevelopment of existing development. Infill will occur to the extent that areas planned for development have not yet been developed and services are extended to those areas.

In 2004, the Housing Element of the County General Plan identified the amount of vacant land in El Dorado Hills suitably zoned for future residential development. It found that in 2002 there were approximately 1,019 acres of vacant land with the capacity to accommodate up to 3,192 new dwelling units. Approximately 2,021 acres of vacant land in the Serrano area of El Dorado Hills were subject to development agreements. This land had vested rights for an additional 4,481 dwellings. Combined, there was vacant land at that time, with services available, to accommodate approximately 7,673 new dwelling units (EDC 2004). Development completed since the 2002 analysis has likely reduced the available dwelling units.

Since adoption of the County General Plan in 2004, the County has received a proposal to change an RR land use designation to LDR. This change would allow the creation of 29 residential lots. (EDC 2007.)

El Dorado Hills is El Dorado County's most active building permit center. For each of the 5 years 2002–2006, the County issued an average of approximately 984 permits for new homes (including second units) annually. The number of permits slowed substantially in 2006, probably as a result of the tightening of the residential financing market that resulted from the collapse of the sub-prime loan industry. Although building permits issuance for 2007 is not yet available, additional slowing in development was anticipated.

Table 1 New Residence Building Permits – El Dorado Hills Permit Center

Year	**Building Permits – Final Permit**
2006	761
2005	1,234
2004	1,234
2003	1,030
2002	660
Total	**4,919**

Source: El Dorado County Development Services Department Permit Center *2006 Annual Report*. June 2007.

In addition to residential development, as discussed above a portion of the service area is also subject to other development classifications such commercial and industrial. Most of the anticipated development in these classifications, especially industrial uses, is anticipated to occur south of Highway 50 along Latrobe Road. EID is obligated to provide water meters to authorized development on a first-come-first-served basis and as such it is anticipated that the rate of development under any classification is anticipated to occur at the same rate as approved by the County. Therefore, it is anticipated that the Proposed Action will provide supply to all classifications of development discussed above as it is approved by the County.

Environmental Consequences

Proposed Action: Implementation of the Proposed Action would provide a more secure source of water for El Dorado Hills, allowing additional development to occur within the proposed service area. As discussed above, development in the El Dorado Hills area has proceeded rapidly in recent years. Although currently growth has slowed due to housing market conditions, a turn around is expected during the next few years once market conditions change. Nonetheless, there remains vacant land that can accommodate additional growth, including residential development. The type and density of these development classifications will be based upon specific County approvals and as such, it is not possible to determine the level of development to be authorized without speculation.

The Proposed Action would enable EID to meet projected future water needs. The distribution of future development will conform to the pattern set forth in the El Dorado Hills Specific Plan and the El Dorado County General Plan. The specific timing of development for any given piece of property that is currently vacant is dependent on the private property owner, the availability of infrastructure to that site, and the time necessary for processing permits, among other variables. As a result, the chronology of future development cannot be projected with certainty.

Because implementation of the Proposed Action would not entail any physical changes to EID's EDHWTP or FLRWPS, land uses at those facilities would remain unchanged.

No Action: Implementation of the No-Action alternative would mean that the El Dorado Hills area would not receive a secure, expanded water supply. Consequently, future development could be constrained by inadequate water supplies. However, it is reasonable to anticipate a separate water source of equal or greater volume would likely be secured to support the development authorized by the General Plan.

Cumulative Effects

The Proposed Action, when added to other past, present, and reasonably foreseeable future actions, may result in adverse cumulative effects to land use due to the growth inducing effects of facilitating delivery of additional water supplies. However, Reclamation's action is the execution of a contract for conveyance of EID's water rights water. Reclamation does not have authority to dictate land use decisions. The local planning agencies are responsible for determining land use. Local planning agencies, along with Local Area Formation Committee (LAFCO), and the applicable water districts prepare the various planning, environmental, and decision documents necessary to any development. The growth within El Dorado County is dictated by projections in the 2004 General Plan. However, these projections are speculative and may be influenced by other socio-economic influences (e.g. economy, housing market, regional job market).

Conclusions

Implementation of the Proposed Action, relative to the No-Action alternative, would result in additional development within the proposed service area. Because no development or new construction is proposed as part of the Proposed Action, such development would not be a direct effect; rather, the Proposed Action would have the indirect effect of inducing growth. Although the County General Plan and zoning provide for additional development within the proposed service area, the supply of available water is a limiting factor under the No-Action alternative. In other words, planned growth exceeds the practical limitations on that growth. Implementation of the Proposed Action would remove this limiting factor, enabling growth to occur.

The potential cumulative effects of the Proposed Action may result in additional development to occur in the proposed service area. However, as discussed above, this development is authorized and approved by the local land use agency, El Dorado County. Because Reclamation's action is limited to conveyance of EID's water rights water and future growth projections have been identified in the 2004 General Plan, the cumulative effects to land use are not expected to be considerable. Overall, the Proposed Action provides a relatively impact-free source of water to accommodate planned growth in the El Dorado Hills area.

3.5 Biological Resources

This section describes potential impacts on biological resources, including federally listed terrestrial and aquatic species that could result from implementation of the Proposed Action. Additional information on Biological Resources (e.g., habitat types, species accounts) can be found in *El Dorado Irrigation*

District's Initial Study and Mitigated Negative Declaration for Relocation of Water Rights - EID Project #00006E (2005).

Threatened and Endangered Species

With respect to Reclamation's obligations under the Federal ESA, this document is intended to serve as a Biological Assessment pursuant to section 7(c) of the federal ESA (16 U.S.C. §1536(c)) and to *50 CFR Part 402* concerning the potential effects of Reclamation's action on federally listed threatened and endangered species and on species proposed for listing.

3.5.1 Terrestrial Resources

Vegetation Communities and Habitat Types

The service area is centered on the El Dorado Hills region of El Dorado County, an area that has been subjected to a large amount of residential development over the last 20 years. Much of the natural vegetation within the service area has been removed, reduced in extent, or disturbed by human activities. Several different major habitat types can be found throughout the service area based on vegetation maps contained in the *El Dorado County General Plan Environmental Impact Report* (EDC 2003). The major vegetation communities in the service area include annual grassland, blue oak woodland, chaparral, blue oak/foothill pine, and montane hardwood (Table 1). Generally, all the habitats within the service area are highly fragmented and disturbed by humans. Small areas of riparian and wetland habitat are also present in the service area, although they are limited in extent and are uncommon. Areas with substantial habitat remaining occur in the northeast portion of the service area at the Pine Hill Preserve. A review of recent aerial photography indicates that a substantial portion of the habitat in the El Dorado Hills area has been converted to residential and urban uses and additional conversion of habitat may have occurred since the acreages in Table 1 were developed.

Table 2. Land Cover Types in the Service Area

Land Cover Type	Acreage
Annual Grassland	6598
Blue Oak Woodland	2130
Blue Oak-Foothill Pine	193
Chamise-Redshank Chaparral	143
Mixed Chaparral	1,139
Montane Hardwood	1,134
Montane Hardwood-Conifer	440
Montane Riparian	7
Urban	5,147
Water	82

Source: California Department of Forestry and Fire Protection 2002 Multi-source Land Cover GIS data.

A California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (2007) query and a list of the species with potential to occur in El Dorado County from the U.S. Fish and Wildlife Service (USFWS) (2008) were used to identify federally listed, proposed, and candidate species that have the potential to occur within the service area (Table 1). The service area in Figure 1 is also the Action Area for the section 7 ESA consultation for listed terrestrial species and designated critical habitat.

Table 3. Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Service Area

Species	Common Name	Federal Status
Wildlife		
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	Threatened
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened
Rana aurora draytonii	California red-legged frog	Threatened
Ambystoma californiense	California tiger salamander	Threatened
Thamnophis gigas	Giant garter snake	Threatened
Plants		
Calystegia stebbinsii	Stebbins' morning-glory	Endangered
Ceanothus roderickii	Pine Hill ceanothus	Endangered
Fremontodendron californicum ssp. *decumbens*	Pine Hill Flannelbush	Endangered
Galium californicum ssp. *Sierrae*	El Dorado bedstraw	Endangered
Senecio layneae (Packera layneae)	Layne's butterweed	Threatened

The service area is outside of the range of giant garter snakes, and giant garter snakes have never been documented within the service area or in El Dorado County (USFWS 2007). Giant garter snake is not discussed further in this document. A brief description of the current status, distribution, and occurrence in the service area of the remaining wildlife and plant species is provided below.

Valley Elderberry Longhorn Beetle

Legal Status and Critical Habitat Designation

The valley elderberry longhorn beetle is federally listed as threatened under ESA. In 1996, the USFWS designated the American River Parkway located in Sacramento County as critical habitat for VELB.

Recovery Plan and Conservation Guidelines

The USFWS completed a recovery plan for the VELB in 1984. The goals of the recovery plan for VELB are "to protect the three known localities, survey riparian vegetation along the Central Valley rivers for remaining VELB colonies and habitat, provide protection to remaining VELB within its suspected historic ranges, and determine the number of sites and populations" (USFWS 1984). On July 9, 1999, the USFWS issued revised conservation guidelines for VELB. The survey and monitoring

procedures described in these guidelines are designed to avoid any adverse effects to VELB (USFWS 1999).

Distribution

The range of the beetle extends throughout the Central Valley of California and associated foothills, from the 3,000-foot-high contour in the east foothills, through the valley floor, to the watershed of the Central Valley in the west foothills (USFWS 1999). Elderberry shrubs are found in the remaining riparian forests and grasslands of the Central Valley and adjacent foothills. The beetle is often associated with various plant species, such as Freemont's cottonwood (*Populus freemontii*), California sycamore (*Platanus racemosa*), willow (*Salix* sp.), and oak (*Quercus* sp.) (USFWS 1999).

Life History and Habitat Requirements

Elderberry shrubs (*Sambucus* sp.) are the host plant for valley elderberry longhorn beetle and are a common component of the remaining riparian forests of the Central Valley. Elderberry shrubs are also common in upland habitats. Field surveys have found that adult valley elderberry longhorn beetles feed on elderberry foliage and perhaps flowers and are present from March through early June. It is during this time that the adults mate. The females lay their eggs, either singularly or in small clusters, in bark crevices or at the junction of stem and trunk or leaf petriole and stem. After hatching, a larva burrows into the stem of the elderberry where it creates a gallery, which it fills with grass and shredded wood. After the larva transforms into an adult beetle, it chews an exit hole and emerges from the elderberry. The life span of valley elderberry longhorn beetle ranges from 1 to 2 years. Studies of the spatial distribution of occupied shrubs suggest that the beetle is a poor disperser (USFWS 1999).

Occurrence in the Service Area

The service area is within the range of the valley elderberry longhorn beetle. No designated critical habitat occurs in the service area. The CNDDB did not indicate any VELB occurrences within the service area. VELB are entirely dependent on elderberry shrubs. Elderberry shrubs that support VELB are most commonly found in riparian habitat, though suitable habitat is also found in oak woodland habitat. Actions that negatively impact VELB are typically associated with land conversion and construction activities that remove elderberry shrubs. Actions that change hydrology affecting elderberry shrubs could also negatively impact VELBs.

The valley elderberry longhorn beetle is dependent on its host plant, elderberry shrubs, which occur in riparian forests and oak woodlands. Elderberry shrubs are known to exist in the vicinity of Folsom Lake, near the service area, and could occur in scattered locations in suitable habitat throughout the service area. These shrubs have been subjected to habitat loss and fragmentation due to urbanization and habitat degradation. For these reasons, there is a low likelihood that the service area would provide suitable habitat for the species (USFWS 2007).

Vernal Pool Fairy Shrimp

Legal Status and Critical Habitat Designation

Vernal pool fairy shrimp is federally listed as threatened under ESA. On August 6, 2003, the USFWS designated critical habitat for four vernal pools crustaceans (including vernal pool fairy shrimp) and 11 vernal pool plants. On August 11, 2005, the critical habitat designation was revised. Lands in several counties (Sacramento, Butte, Madera, Merced, and Solano) that were originally proposed as critical habitat were excluded in the final ruling on economic analysis.

Recovery Plan

The USFWS prepared the *Recovery Plan for Vernal Pool Ecosystems in California* (USFWS 2005), which outlines strategies for the recovery and conservation of vernal pools and the federally listed plant and wildlife species that occur in these ecosystems. The recovery plan features 33 species of plants and animals that occurs exclusively or primarily in vernal pool ecosystems in California and southern Oregon. The 33 species include 20 listed species (including 10 endangered plants, five threatened plants, three endangered animals, and two threatened animals) and 13 species of special concern. The USFWS identified vernal pool regions throughout California that are based on the geography and/or ecology of one or more of the vernal pool species identified in the recovery plan. Within each region, core areas were identified where recovery actions will be focused because they provide the necessary features that are important to the recovery of a species.

Distribution

The shrimp is found at scattered locations throughout California's Central Valley. It ranges from the Millville Plains and Stillwater Plains in Shasta County south through most of the length of the Central Valley and to the eastern margins of the Coast Ranges, from San Benito County south to Ventura County (Eriksen and Belk 1999; USFWS 2005).

The vernal pool fairy shrimp inhabits clear to turbid water in earth sumps and grass- or mud-bottom vernal pools and swales in unplowed grasslands and basalt-flow vernal pools. The species also has been observed in rock outcrop pools, roadside ditches, road ruts, bulldozer scrapes, and backhoe pits. Fairy shrimp produce cysts (eggs) that lie dormant in the soil over summer and hatch during the winter rainy season, when favorable environmental conditions prevail: when pools are inundated, the water temperature is cool, and high oxygen concentration is present (Eriksen and Belk 1999).

Occurrence in the Service Area

The service area is within the range of vernal pool fairy shrimp. No designated critical habitat occurs in the service area. The USFWS' *Recovery Plan for Vernal Pool Ecosystems in California and Southern Oregon* identified that vernal pool fairy shrimp occurred in one location in El Dorado County (USFWS 2005). This population is located at the edge of the service area in the Mormon Island Preserve at Folsom Lake Recreation Area. This preserve is approximately 110-acres in size and contains natural vernal pool habitat along with riparian woodland, fresh emergent wetland, and oak woodland (USFWS 2007). CNDDB 2007 shows no vernal pool fairy shrimp occurrences within the service area.

California Red-Legged Frog

Legal Status and Critical Habitat Designation

The California red-legged frog is federally listed as threatened under the ESA. Critical habitat was designated by USFWS on April 13, 2006.

Recovery Plan

In 2002, the USFWS issued the Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). The objective of the recovery plan is to reduce threats to CRLF and improve the population status sufficiently to warrant delisting.

Distribution

The California red-legged frog is one of two subspecies of red-legged frog (*Rana aurora*) found on the Pacific coast. The historical range of California red-legged frog (red-legged frog) extended coastally from the vicinity of Point Reyes National Seashore in Marin County and inland from the vicinity of Redding, southward to northwestern Baja California. Its current range consists of isolated locations in the Sierra Nevada and North Coast and northern Transverse Ranges. It is relatively common in the San Francisco Bay area and along the central coast and is still present in Baja California (USFWS 2002).

Life History and Habitat Requirements

Red-legged frogs use a variety of aquatic, riparian, and upland habitat types. However, some individuals may complete their entire life cycle in a pond or other aquatic site that is suitable for all life stages. Red-legged frogs require cool-water habitats, including pools, streams, and ponds, with emergent and submergent vegetation. Red-legged frogs are found in habitats with deep (at least 2.3 feet [0.7 m]), still or slow moving water and vegetation consisting of willows (*Salix* sp.), tules (*Scirpus* sp.), or cattails (*Typha* sp.). Juvenile frogs seem to favor open, shallow aquatic habitats with dense submergent vegetation. Although red-legged frogs can inhabit either ephemeral or permanent streams or ponds, populations probably cannot persist in ephemeral streams in which all surface water disappears (Jennings and Hayes 1994; USFWS 2002).

As adults, red-legged frogs are highly aquatic when active but depend less on permanent water bodies than do other frog species. Adults may take refuge during dry periods in rodent holes or leaf litter in riparian habitats. Although red-legged frogs typically remain near streams or ponds, marked and radio-tagged frogs have been observed to move more than 2 miles (3.2 km) through upland habitat. These movements are typically made during wet weather and at night (USFWS 2002).

Occurrence in the Service Area

The service area occurs within the range of California red-legged frog. No designated critical habitat occurs in the service area. The CNDDB indicated a California red-legged frog occurrence within the service area near Folsom Lake (CNDDB 2007). Jana Milliken from USFWS said that this sighting is questionable because the observer detected a frog jumping into the water without the characteristic alarm call of a bullfrog (which is suggestive of red-legged frog) and because there was no visual confirmation that it was a red-legged frog (Jones & Stokes 2007). One population of California red-legged frogs are known to occur in El Dorado County, in an impoundment of the north fork of Weber Creek, near Placerville (CNDDB 2007). This population is located approximately 22 miles east of the service area. California red-legged frogs historically occurred in El Dorado at Rock Creek and at Traverse Creek, which are approximately 10 miles east of the service area. Degradation and loss of habitat are the primary factors that have negatively affected California red-legged frogs throughout its range. California red-legged frogs are not expected in the service area, and the proposed action will not adversely affect California red-legged frogs (USFWS 2007).

California Tiger Salamander

Legal Status and Critical Habitat Designation

The Central Valley population of California tiger salamander is federally listed as threatened under the ESA. Distinct population segments in Santa Barbara and Sonoma Counties are federally listed as endangered. California tiger salamander is also a California species of special concern. On August 23, 2005, the USFWS designated critical habitat for the central population of California tiger salamander in 19 counties.

Recovery Plan

The USFWS has not prepared a recovery plan for the Central Valley population of California tiger salamander.

Distribution

Critical habitat was designated on August 23, 2005, but the service area does not fall within critical habitat. The species is endemic to the San Joaquin–Sacramento River valleys, bordering foothills, and coastal valleys of central California. The species' range is from Sonoma County and the Colusa-Yolo County line south to Santa Barbara County in the Coast Ranges and from southern Sacramento County south to Tulare County in the Central Valley (Jennings and Hayes 1994).

Life History and Habitat Requirements

The California tiger salamander is a lowland species restricted to annual grasslands and foothill oak savanna regions where its breeding habitat occurs. Breeding habitat consists of temporary ponds or pools, some permanent waters, and rarely slower portions of streams. Permanent aquatic sites are unlikely to be used for breeding unless they lack fish predators. California tiger salamanders also require dry-season refuge sites in the vicinity of breeding sites. California ground squirrel burrows are important dry-season refuge sites for adults and juveniles (Jennings and Hayes 1994).

Adult California tiger salamanders move from subterranean burrow sites to breeding pools during November–February after warm winter and spring rains. Eggs are probably laid in January–February at the height of the rainy season. Nine to 12 weeks are needed to complete development through metamorphosis. During winter, California tiger salamanders take refuge in damp places near the surface of the ground during the day and emerge at night to forage. During dry weather, these salamanders take refuge in ground squirrel burrows, crevices in the soil, or in other burrows (Jennings and Hayes 1994).

Occurrence in the Service Area

CNDDB 2007 shows no California tiger salamander occurrences within the service area. No designated critical habitat occurs in the service area.

Gabbro Plants

Five plants listed as threatened or endangered under the federal Endangered Species Act (ESA) are known to occur in the service area. The plants are chiefly restricted to an area with gabbro-derived soils in western El Dorado County on a geologic formation known as the Pine Hill formation. Collectively, the plants are known as the gabbro plant species. A brief description of the current status, known distribution, and occurrence in the service area for the gabbro plant species is provided below.

Legal Status and Critical Habitat Designation

Stebbins' morning-glory (*Calystegia stebbinsii*), Pine Hill ceanothus (*Ceanothus roderickii*), Pine Hill flannelbush (*Fremontodendron californicum*), and El Dorado bedstraw (*Galium californicum*) were listed as endangered, and Layne's butterweed (*Packera layneae*) was listed as threatened by the USFWS on October 18, 1996 (*61 FR 54346*). No critical habitat has been designated for these species.

Habitat Requirements

Three of the gabbro plants species, Pine Hill ceanothus, Pine Hill flannelbush, and El Dorado bedstraw are endemic to gabbro-derived soils on the Pine Hill formation, and Stebbins' morning-glory and Layne's butterweed occur on both gabbro and serpentine-derived soils (USFWS 2002). Layne's butterweed is also known to occur on metamorphic rock-derived soils at one location (USFWS 2002).

Recovery Plan

The USFWS has published the Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills (recovery plan) (USFWS 2002). The recovery plan outlines conservation priorities for the gabbro plants including stabilizing and protecting populations. The ultimate goals of the plan are to protect and restore sufficient habitat and number of populations and to ameliorate the threats that caused the listing. As habitat loss is the primary cause of species endangerment for the gabbro plants, a central component of the recovery and conservation effort was to establish a network of conservation areas and reserves that represent most of the important gabbro habitat.

Distribution

The gabbro plants primarily occur on the Pine Hill geologic formation, an area of approximately 30,000 acres in western El Dorado County. Pine Hill ceanothus, El Dorado bedstraw, and Pine Hill flannelbush are endemic to the Pine Hill area and are not known to exist under natural conditions in any other locations. Currently, the gabbro plants are protected in the 4,042-acre Pine Hill Preserve (PHP), formed by five non-contiguous units that are scattered across the Pine Hill formation. The five preserve units and the acreage of each as of October 2007 are listed below (Hinshaw 2007).

- Salmon Falls Unit—2,699 acres
- Martel Creek Unit—320 acres
- Pine Hill Unit—403 acres
- Penny Lane Unit—166 acres
- Cameron Park Unit—454 acres

While the PHP represents the largest remaining patches and populations of the gabbro plants, each of the gabbro plants is also known to exist outside of the PHP on unprotected lands. As outlined in the recovery plan, the ultimate goal is to establish at least 5,000 preserved acres, and land acquisition efforts to meet this goal are ongoing (Hinshaw 2007).

Occurrence in the Service Area

The service area contains a portion of the PHP designated as the Salmon Falls Unit. Gabbro plants are only known to occur in the service area at this location. According to the CNDDB (2007), each of the species, except for Pine Hill flannelbush, is known to occur at the Salmon Falls Unit of the PHP. Although Pine Hill flannelbush has not been detected in the Salmon Falls Unit, the recovery plan recommended introduction of this species to suitable habitat in the area. Reclamation conducted a GIS analysis in August 2005 for EID's long-term CVP water service contract which showed that within the service area, suitable habitat remaining within the PHP that has not been developed is highly fragmented because of urban development and is limited to just over 100 acres. A subsequent review completed in January 2008 indicates that the amount of undeveloped land in this area has not changed since 2005.

Environmental Consequences

Proposed Action: The Proposed Action does not propose nor encourage changes in land use beyond the uses planned and authorized under El Dorado County land use policies. Under California law, the distribution and type of future development must conform to the pattern set forth in the El Dorado County General Plan.

Implementation of the Proposed Action would result in an increase in the water supply within the service area, which could result in additional growth, an indirect effect of the Proposed Action. Growth would occur in the service area at some level with or without implementation of the Proposed Action. In areas throughout the service area, impacts could occur to terrestrial habitats and wildlife through habitat conversions resulting from factors that include, but are not limited to, increased commercial and residential development, pollution, and human and domestic pet population intrusion.

As of the preparation of the 2004 General Plan, approximately 1,640 acres of vacant land is present in the service area (EDC 2004). As outlined in the *El Dorado County General Plan,* approximately 700 acres of the remaining vacant land is not under a specific plan or part of the Pine Hill Ecological Preserve and can be developed for various uses at various densities (EDC 2004). The El Dorado Hills area is the fastest growing portion of El Dorado County, increasing dramatically in population in the last 20 years (EDC 2004). Future growth into currently vacant land in the El Dorado Hills area will result in continued fragmentation of natural habitats and the removal and disturbance of the small amount of habitat remaining for both common and rare plant and animal species.

California red-legged frog, Valley elderberry longhorn beetle, vernal pool fairy shrimp, and California tiger salamander are not likely to occur in the service area and thus are not likely to be adversely affected by the Proposed Action.

Occupied and potential habitat for the gabbro plants exists in the northeastern corner of the service area only. This area was included in the Section 7 consultation for EID's long-term CVP water service contract which the FWS issued a Biological Opinion (BiOp) on January 12, 2006 (Reference 1-1-04-F-0489). Approximately 100 acres of undeveloped habitat scattered over approximately nine parcels remains at this location. The potential effects to gabbro plants in this area were analyzed in the BiOp referenced above. Implementation of the Proposed Action will not result in any additional effects beyond those analyzed and approved in the January 12, 2006 BiOp. The FWS concluded that "the fate of these parcels…will not preclude or substantially impair management and recovery activities in the…Pine Hill Preserve." Therefore, implementation of the Proposed Action will not likely adversely affect gabbro plants within the proposed service area.

No Action: As described above, implementation of the no action alternative would result in limits on the available water supply, which would have the affect of restraining the growth envisioned in the El Dorado County General Plan. Although impacts to terrestrial habitats, wildlife species, and threatened and endangered species could still occur, growth and subsequent impacts would be limited under the no action alternative. It is also reasonable to consider that, without implementation of the Proposed Action, EID may pursue other water supply projects to meet General Plan growth projections.

Interrelated and Interdependent Effects

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation (ESA Handbook, 1998). No specific interrelated or interdependent actions have been identified associated with the Proposed Action.

Cumulative Effects

The Proposed Action, when added to other past, present, and reasonably foreseeable future actions, may result in adverse cumulative effects to biological resources in El Dorado County. Implementation of the Proposed Action would result in an increase in the water supply within the service area, which could result in additional growth. Additional growth would contribute to habitat loss and fragmentation within the proposed service area. However, the El Dorado County General Plan has protections for special-status wildlife and plants and their habitats in the Conservation and Open Space Element. This element includes policies related to soil conservation and erosion, water quality and preservation of wetlands, conservation of listed plant species, and other conservation measures for non-listed plants and wildlife. El Dorado County is in the process of developing an Integrated Natural Resources Management Plan (INRMP) that will identify important habitat in the County and establishes a program for effective habitat preservation and management (Policy 7.4.2.8). The policies of the El Dorado County General Plan, including implementation of the INRMP, should minimize potential cumulative effects to biological resources within the proposed service area.

Conclusions

Implementation of the Proposed Action will accommodate additional growth over the no action alternative. As discussed above, additional growth will cause impacts to terrestrial habitats and species, including federally listed plant and wildlife species. Although growth will occur under both the Proposed Action and the no action alternative, the potential for additional growth and subsequent environmental impacts would be higher under the Proposed Action.

The results of this analysis indicate that implementation of the Proposed Action will have no effect on giant garter snakes and will not likely adversely affect valley elderberry longhorn beetle, California red-legged frog, vernal pool fairy shrimp, California tiger salamander, and gabbro plant species.

The service area for the Proposed Action is not located within any designated critical habitat for any species; therefore, the Proposed Action is not likely to result in the destruction or adverse modification of critical habitat.

3.5.2 Aquatic Resources

This section describes potential impacts on aquatic species that could result from implementation of the Proposed Action. It is anticipated that minor benefits to aquatic species would occur as a result of additional instream flows in Hangtown Creek, Weber Creek, Slab Creek and the South Fork of the American River. The following analysis focuses on federally listed species in the lower American River.

Action Area

The Action Area for the section 7 ESA consultation with NOAA Fisheries for listed aquatic species and designated critical habitat is provided in Figure 3. The Action Area consists of Folsom Reservoir downstream to the lower American River at the confluence of the Sacramento River. This Action Area was selected based on several factors: 1) the total volume of water to be diverted under the Proposed Action (up to 4,560 AF) is small relative to Folsom Reservoir's capacity, 2) the water to be diverted under the Proposed Action is real water from existing water supplies that is measured entering Folsom Reservoir as well as at the Point of Diversion, 3) potential changes to coldwater pool volume in Folsom Reservoir provide a reasonable metric for evaluating potential effects to anadromous fishes downstream in the lower American River, 4) no hydrologic modeling tools are available to describe potential effects at such fine resolutions (i.e. 4,560 AF is within the error range of available modeling tools like CALSIM II), and 5) the CVP-OCAP, which includes this contract in the Proposed Action, will provide a system-wide hydrologic analysis of the cumulative effects of CVP operations to listed species and critical habitat.

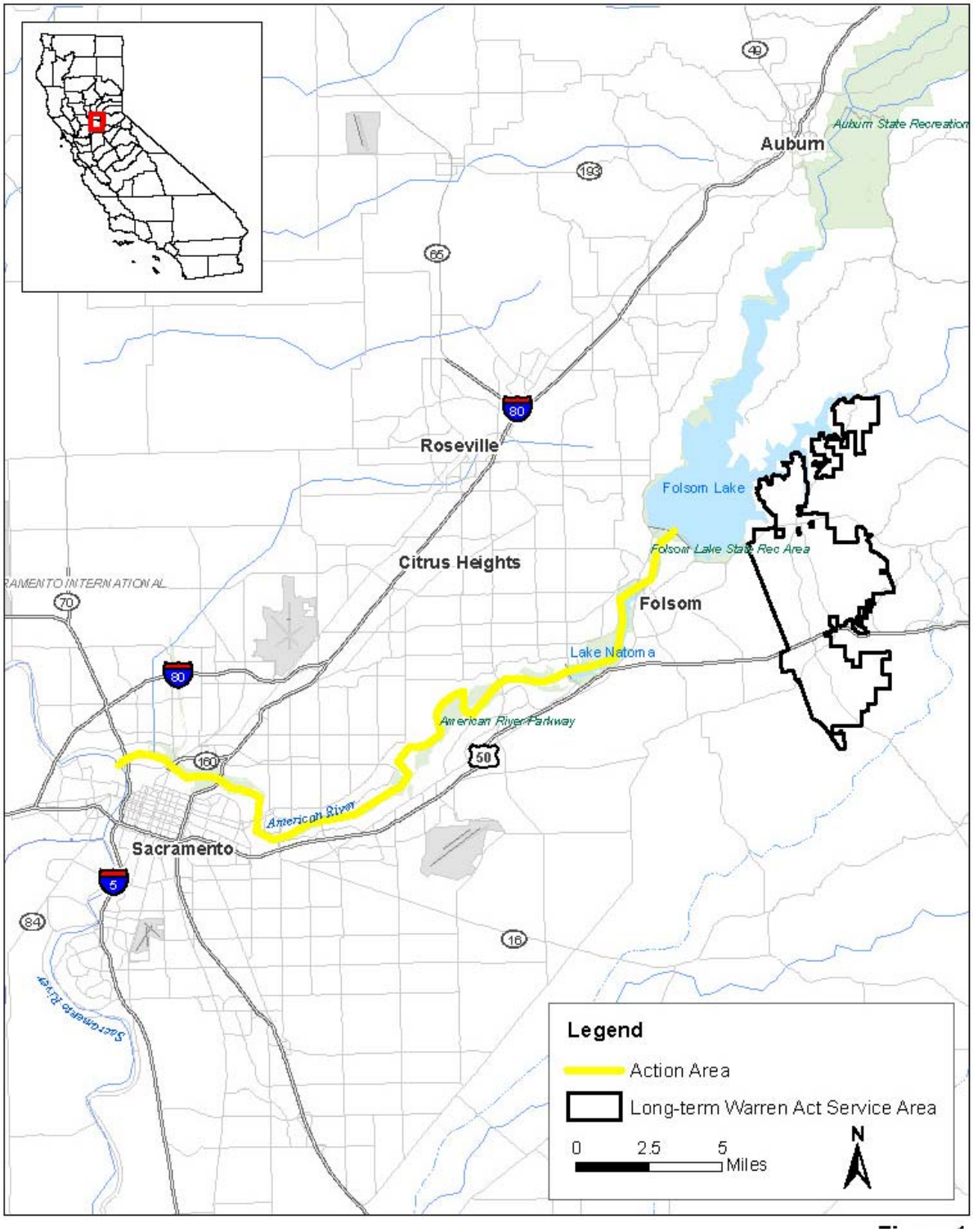

Figure 3 Action Area for section 7 ESA consultation for aquatic species.

Species

Table 3 identifies anadromous species with the potential to occur in the Action Area.

Table 4 Federally Listed, Proposed, and Candidate Aquatic Species with Potential to Occur in the Action Area

Species	Common Name	Federal Status
(*Oncorhynchus tshawytscha*)	Central Valley spring-run Chinook salmon ESU	Threatened
(*Oncorhynchus mykiss)*	Central Valley steelhead DPS	Threatened

Central Valley steelhead and fall- and spring-run Chinook salmon may occur in the American River below Folsom and Nimbus Dams. Spring-run Chinook salmon juveniles could enter and rear in the American River (i.e. non-natal rearing). American River steelhead and Chinook salmon populations consist of a mixture of hatchery and wild fish. Critical habitat for Central Valley steelhead and spring-run Chinook salmon includes the lower American River (70 FR 52616, 52600). These species are discussed below.

Other aquatic species within the Sacramento-San Joaquin system include the Delta smelt, winter-run Chinook salmon, and green sturgeon. These species are not known to occur in the Action Area (Folsom Reservoir and Lower American River). Delta smelt occurs in the Sacramento-San Joaquin Estuary. Winter-run Chinook salmon and green sturgeon both occur in the mainstem Sacramento River. Winter-run Chinook salmon primarily spawn in the mainstem Sacramento River between Keswick Dam (RM 302) and the Red Bluff Diversion Dam (RM 242) (NMFS 2000a). There have been no recent occurrences of green sturgeon (adults or juveniles) in the American River (Beamesderfer et al. 2004:12). Because these species are not known to occur in the Action Area, winter-run Chinook salmon, green sturgeon, and Delta smelt will be not be discussed further in this document.

Central Valley Steelhead

Central Valley steelhead is listed as threatened under ESA. Critical habitat for steelhead is designated in the American River (70 FR 52596). The species was once abundant in California coastal and Central Valley drainages. However, population numbers have declined significantly in recent years, especially in the tributaries of the Sacramento River.

An anadromous variant of rainbow trout, steelhead is closely related to Pacific salmon. Steelhead typically migrate to marine waters after spending 1 year or more rearing in fresh water. In the marine environment, they typically mature for 1–3 years before returning to their natal stream to spawn as 3- or 4-year-olds. Unlike other Pacific salmon, steelhead are capable of spawning more than once before they die. In the lower American River, steelhead spawning season typically lasts from December through

April. After several months, fry emerge from the gravel and begin to feed. Juveniles rear in freshwater for 1 year or more before migrating to the ocean as smolts.

Juvenile rearing success is assumed to deteriorate at water temperatures ranging from 62.6 to 77ºF depending on time of year and developmental stage. Nimbus Hatchery steelhead preferred temperatures between 62.6 and 68ºF (Cech and Myrick 1999). American River juvenile steelhead can be expected to show significant mortality at temperatures exceeding 82ºF (Myrick and Cech 2001:19).

Fall-Run Chinook Salmon

Central Valley fall-run Chinook salmon are commercially and recreationally important. This evolutionarily significant unit (ESU) is a federal species of concern. Because fall-run Chinook salmon ESU is currently the largest run of Chinook salmon in the Sacramento River system, it continues to support commercial and recreational fisheries of significant economic importance.

In general, adult fall-run Chinook salmon migrate into the Sacramento River and its tributaries from July through December, with immigration peaking from mid-October through November. Fall-run Chinook salmon spawn in numerous tributaries of the Sacramento River, including the lower American River, lower Yuba River, Feather River, and tributaries of the upper Sacramento River. Adult migration into the lower American River typically occurs from mid-September through January, with highest numbers in mid-October to December (Williams 2001:9). Spawning generally occurs from mid-October through February peaking in mid-October to December (Williams 2001:9). Incubation occurs from mid-October to February, with fry emergence typically beginning in January and extending to through mid-April (Williams 2001:10). Fall-run Chinook salmon emigrate as post-emergent fry, juveniles, and smolts after rearing in their natal streams for up to 6 months. Consequently, fall-run emigrants may be present in the lower American River from January through July, with most rearing occurring February through May (Williams 2001:10).

Myrick and Cech (2001) have compiled the most comprehensive review of temperature effects on Central Valley juvenile Chinook salmon to date. Chinook salmon eggs can survive at temperatures ranging from 35 to 62ºF, but highest survival rates occur between approximately 45 and 50ºF. Survival of juvenile Chinook salmon under high temperatures is a function of acclimation temperature and exposure time. In general, the maximum temperature at which eggs can survive is positively correlated with acclimation temperature. The reported chronic (> 7 days) upper lethal limit for Central Valley Chinook salmon juveniles from the American River is approximately 75ºF (Rich 1987), although temperatures approaching 84ºF may be tolerated for short periods (Myrick and Cech 2001:18). Growth of juvenile Chinook salmon occurs at temperatures ranging from approximately 46 to 77ºF, with maximum to near-maximum growth rates reached at approximately 56 to 68ºF (Myrick and Cech 2001:29).

Migrating adult Chinook salmon experience mortality at approximately 75ºF, but the precise threshold depends on acclimation temperature and exposure time (Raleigh et al 1986). Conditions supporting adult Chinook salmon migration are assumed to deteriorate as temperature warms between 53.6ºF and 69.8ºF. Thermal blockage to adult fall-run Chinook salmon was reported by Hallock (1970) at a temperature of 69.8ºF in the Sacramento–San Joaquin River Delta. Partial blockage was observed at 66ºF.

Spring-Run Chinook Salmon

The Central Valley spring-run Chinook salmon ESU, which includes populations spawning in the Sacramento River and its tributaries, is listed as threatened under ESA and CESA. Spring-run Chinook

salmon historically occurred from the upper tributaries of the Sacramento River to the upper tributaries of the San Joaquin River. However, they have been extirpated from the San Joaquin River system. The only streams in the Central Valley with remaining wild spring-run Chinook salmon populations are the Sacramento River and its tributaries, including the Yuba River, Mill Creek, Deer Creek, and Butte Creek. Critical habitat is designated for spring-run Chinook salmon in the Sacramento River and its tributaries including the lower 10 miles of the American River (70 FR 52600).

Spring-run Chinook salmon enter the Sacramento River from late March through September (Reynolds et al. 1993), but peak abundance of immigrating adults in the Delta and lower Sacramento River occurs from April through June. Adult spring-run Chinook salmon remain in deepwater habitats downstream of spawning areas during summer until their eggs fully develop and become ready for spawning. This is the primary characteristic that distinguishes spring-run Chinook salmon from the other runs. Spring-run Chinook salmon spawn primarily upstream of the Red Bluff Diversion Dam and in the aforementioned tributaries. Spawning occurs from mid-August through early October (Reynolds et al. 1993). A small portion of an annual year-class may emigrate as post-emergent fry (less than 1.8 inches long) and reside in the Delta undergoing smoltification. However, most are believed to rear in the upper river and tributaries during winter and spring, emigrating as juveniles (more than 1.8 inches long). The timing of juvenile emigration from the spawning and rearing reaches can vary, depending on the tributary of origin, from November through June. This is when spring-run juveniles would be expected to be present in the American River.

Temperature Requirements – Lower American River

This section is copied from the October 2004 Biological Opinion on the Long-Term Central Valley Project Operations Criteria and Plan (CVP-OCAP):

"Temperature goals within the LAR are to provide suitable temperatures during the summer months for Nimbus Fish Hatchery and for instream rearing juvenile steelhead, while minimizing the loss of the cold water pool left available for spawning fall-run Chinook salmon. Currently, Reclamation is required to control water temperatures between Nimbus Dam and Watt Avenue (RM 9.4) to less than or equal to 65 ^{o}F, from June 1 through November 30 each year. However, meeting this objective is often not obtainable in years when storage in Folsom is low. In addition, Reclamation tries to provide 60 ^{o}F water for fall-run Chinook salmon spawning starting November 1."

Critical Habitat

Critical habitat has been designated for Central Valley steelhead and spring-run Chinook salmon. The American River is included in the critical habitat designation for steelhead (70 FR 52616) and spring-run Chinook salmon (70 FR 52600). Critical habitat for spring-run Chinook extends approximately 10 miles upstream from the confluence with the Sacramento River. Critical habitat for steelhead extends farther upstream to Nimbus Dam (70 FR 52616). The primary constituent elements in the action area include freshwater rearing habitat and freshwater migration corridors that have adequate substrate, water quality and quantity, temperature, velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions.

Essential Fish Habitat

Both Central Valley Chinook salmon runs (spring and fall) are subject to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and regulated by the Pacific Coast Salmon Fishery Management Plan (FMP). The FMP includes designation of Essential Fish Habitat (EFH) and requires

consultation with NOAA Fisheries if a project or action would potentially affect EFH. EFH applies to Pacific salmon and other commercial fish species and is defined as the aquatic habitat necessary for spawning, breeding, feeding, or growth to maturity. Important components of EFH are substrate; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity. The project area is within the EFH for fall- and spring-run Chinook salmon.

Environmental Consequences

Changes in the coldwater pool (CWP) at Folsom Reservoir could change water temperatures for spawning, incubation, and rearing salmonids in the Lower American River. Salmonids require cold water for all life history stages and could be adversely affected by increases in water temperatures. Table 4 below shows optimal and lethal water temperatures for each life stage. Water temperatures approaching lethal levels can be tolerated for various lengths of time depending on their magnitude and duration of exposure and the acclimation history of individual fish.

Table 5 Optimal Water Temperatures for Chinook Salmon and Steelhead

Species	Adult Migration	Incubation[3]	Rearing[3]	Smoltification[3]	Lethal Limit[3]
Chinook Salmon (all runs)	46.4 – 54.5°F [1]	39 – 53.6°F	66.2°F	42.8 – 68°F	75°F (Adult) 77°F (Juvenile)
Central Valley Steelhead	44.6 – 51.8ºF[2]	44.6 – 50°F	51.8 – 66.2°F	43.7 – 52.3°F	70°F (Adult) 82°F (Juvenile)

1 Raleigh et al 1986.

2 NMFS 2000.

3 Myrick and Cech 2001.

In the Lower American River, some lifestages are more frequently exposed to elevated water temperatures due to the hydrologic characteristics of the American River watershed and the multiple use management of the system's reservoirs. The effects analysis focuses on these particular lifestages:

- Fall-run Chinook salmon – adult migration and spawning
- Steelhead – juvenile rearing
- Spring-run Chinook salmon – juvenile rearing

Proposed Action: A water temperature analysis (Appendix D Technical Memorandum—Potential Effect of Diversions on Folsom Reservoir Cold Water Pool) is summarized above in Section 3.3 *Facilities and Operations*. Water temperature profiles of the period of record (2002-2006) from May to November were analyzed when flows are lowest and water temperatures are warmest. The analysis shows the estimated change in penstock release temperatures for a single day of the year at the end of summer that

would be associated with the Proposed Action. It is assumed that this change represents the maximum change in water temperature that would be expected in a given year.

Life stages potentially affected by water temperature increases from May through October are adult Chinook salmon migration and spawning, juvenile spring-run Chinook salmon rearing, and juvenile steelhead rearing. Some juvenile Chinook salmon emigration could occur into May (Williams 2001:21). The water temperature modeling determined a 0.6°F increase as of October 1 during 2002, which was a dry year. All other years showed an increase of 0.1°F or 0.2°F (Appendix D) and temperature changes of less than 0.3ºF is assumed to be non-significant because this represents the lower limit of accuracy of temperature measurement. An increase of 0.6°F during October could affect migrating and spawning adult Chinook salmon, juvenile spring-run Chinook salmon rearing, and juvenile steelhead rearing. . However, the temperature change described in this analysis only occurred in the driest of years (2002) and would not likely have a direct effect to Reclamation's ability to meet downstream fishery requirements (65 degrees at Watt Ave).

Critical habitat and essential fish habitat both address impacts on environmental factors affecting fish habitat quality. Both consider water quality impacts as impacts on fish habitat. The proposed project could affect water quality by increasing water temperatures to levels higher than those suitable for steelhead and Chinook salmon. However, the temperature change described in this analysis only occurred in the driest of years (2002) and even during that year, the temperature change (0.6°F) is only slightly above the resolution of the temperature measurements.

No Action: Implementation of the No-Action alternative would have no impact on the volume of the coldwater pool in Folsom Reservoir or its associated water temperatures. The pre-1914 appropriative rights water diversions have already ceased at the historic diversion locations and currently flow downstream into Folsom Reservoir. Weber Reservoir releases into lower Weber Creek would continue to occur without the proposed action due to the release agreement in place with California Department of Fish and Game. However, full implementation of the MOU with DFG to increase the minimum flows from Weber Reservoir into Weber Creek would not occur.

Conclusions

Implementation of the Proposed Action, relative to the No-Action alternative, could result in direct effects on adult fall-run Chinook salmon, juvenile steelhead, and juvenile spring-run Chinook salmon. Increases in water temperatures above 60°F during late summer and early fall could result in a delay of fall-run Chinook spawning. Temperatures exceeding 65 degrees at Watt Ave during the late summer and fall may have adverse effects on juvenile steelhead and spring-run Chinook salmon. However, given the small magnitude of the potential temperature changes and the infrequent occurrence of such changes, the effect on overall survival and abundance of Chinook salmon and steelhead is likely to be insignificant.

Critical habitat for Central Valley steelhead and spring-run Chinook salmon are likely to be unaffected by the proposed project as well. The Primary Constituent Element of concern is freshwater rearing habitat. Temperature is the only component of critical habitat that may be affected. However, given the small magnitude of the potential temperature changes and the infrequent occurrence of such changes, the effect on overall survival and abundance of Chinook salmon and steelhead is likely to be insignificant.

EFH for fall- and spring-run Chinook salmon could also be affected by the increased water temperatures as well. As explained above, juvenile spring-run Chinook salmon are unlikely to be affected by an increase in temperature in October because they are not present in the American River at that time of

year. Adult fall-run Chinook salmon spawning and migration could be affected by an increase in water temperature. However, as explained above, this increase is small and only occurred in 1 out of 5 years. Accordingly, the effect on overall survival and abundance of fall-run Chinook salmon is likely to be insignificant.

Cumulative effects from the Proposed Action combined with other projects could exacerbate increased water temperatures in the American River. However, these effects are most likely to arise during dry years when water temperatures would naturally be elevated. Also, as discussed in the Environmental Commitment section of the *El Dorado Irrigation District's Initial Study and Mitigated Negative Declaration for Relocation of Water Rights—EID Project #00006E* (2005), EID is working with Reclamation to build a temperature control device to conserve cold water in the CWP in Folsom Reservoir. Accordingly, effects on Folsom Reservoir's coldwater pool, and therefore on Chinook salmon and steelhead would be less than significant.

Implementation of the Proposed Action is not likely to adversely affect the above federally listed, proposed for listing, candidate, and EFH-managed species known to occur within the action area. In addition, the Proposed Action is not likely to adversely affect critical habitat for Central Valley steelhead and spring-run Chinook salmon, or EFH for Chinook salmon. The Proposed Action would not adversely affect the critical habitat constituent elements or their management in a manner likely to appreciably diminish or preclude the role of that habitat in the recovery of Central Valley steelhead and spring-run Chinook salmon.

In addition, as described above, Reclamation has determined that the Proposed Action will have no effect on the Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionary Significant Unit (ESU) or its designated critical habitat, Delta smelt (*Hypomesus transpacificus*), and the Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*) because these species are not known to occur within the Action Area of the Proposed Action.

3.6 Indian Trust Assets

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

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain Indian Trust assets reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

The Shingle Springs Band of Miwok Indians has trust land located in Section 29 T10N R10E, about 3 miles south of Weber Creek. Slate Creek flows through the NE corner of the Band's trust land and on into Dry Creek, which flows into Weber Creek. The Shingle Springs Band has a federally reserved right (an ITA) to surface water from Slate Creek. However, the Band does not possess a federally reserved right to Weber Creek. Therefore, the Indian trust assets of the Shingle Springs Band are not affected by wheeling non-project flows through Weber Creek.

Environmental Consequences

The effects of the Proposed Action on ITAs are compared to conditions under the No Action alternative.

Proposed Action: ITAs would not be affected with implementation of the Proposed Action because there are no assets present in EID's existing federal service area.

No Action: ITAs would not be affected with implementation of the No Action alternative because there are no assets present in EID's existing federal service area.

Cumulative Effects

The cumulative effect of the Proposed Action will have no adverse effects to ITAs because 1) the project only involves conveyance of non-Project water through federal facilities, and 2) there are no ITAs located within the area where this water will be delivered.

Conclusions

There are no ITAs identified within the action area, therefore no adverse impacts to ITAs are anticipated with implementation of the Proposed Action.

3.7 Cultural Resources

Section 106 of National Historical Preservation Act (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties.

The Area of Potential Effect for the Proposed Action is defined as EID's existing federal service as defined in the Central Valley Project water service contract #14-06-200-1357A-LRTI (Figure 1).

A description of the cultural resources within El Dorado County, as well as the potential environmental consequences associated with delivering CVP water to EID's existing federal service area is provided in the *June 2005 Environmental Impact Statement for the Central Valley Project Long-Term Water Service Contract Renewals - American River Division (American River Division EIS, 2005)*. Chapter 4 (pages 4-60 to 4-61) provides a description of the affected environment:

> **El Dorado County.** El Dorado County contains approximately 850 sites (prehistoric and historic) officially recorded with the North Central Information Center at California State University, Sacramento. In addition to the recorded historic sites, there are also 14 properties listed on the National Register of Historic Places (10 of these are located in the western portion of the county), nine eligible for listing on the National Register, 27 State Historic Landmarks, and 25 named gold mining districts.

El Dorado County also keeps an inventory of county resources not included on state or federal lists. Over90 sites are on this list; a majority of the sites occurs in the western county. Resources in the county inventory include Wells Fargo Express offices, stage coach stops, the site of the first county courthouse, pioneer cemeteries, historic homes, jail houses, and wineries.

The County was once inhabited by the ancestors of the Nisenan (Southern Maidu), Northern Sierra Miwok, and Washoe peoples. The Nisenan generally occupied the area between the South Fork of the American River and the Cosumnes River from the foothills to the crest of the Sierra Nevada. The Northern Sierra Miwok occupied territory south of the Cosumnes River. The Washoe occupied the area east of the crest of the Sierras into Nevada.

Sites have been identified dating back as far as 6000 B.C. in the Tahoe Basin region, and as recent as circa 1800 A.D. on the west slope of the County. Two "early man" sites have been reported in the southeastern Sacramento area dating to around 12,000 years ago.

A variety of site types have been identified within the County are expected to be found in various geographic areas including: village sites with artifacts, housepits, and the remains of dancehouses; cemeteries and cry sites; petroglyphs (rock art); quarries where materials for stone tools were collected and sometimes processed; temporary campsites; bedrock milling areas where acorns and other seeds were processed; scatters of artifacts and tool production waste materials; and ceremonial sites with little or no physical remnants.

El Dorado County's first mass immigration began because of the discovery of gold at Coloma in 1848. Boom towns appeared overnight between 1848 and 1852. Placer mining was replaced by hydraulic mining, which survived throughout the 1880s. By 1900, much of the transitory population had departed, but many of the communities created by the 1849 Gold Rush lived on. In the 1920s and 1930s, a major attraction was auto touring to Lake Tahoe via "The Wishbone". This route originated in Sacramento and included U.S. Highway 50, State Route 89, and westbound Interstate 80, returning back to the Sacramento Valley.

A systematic survey of all lands within the County has never been performed. Archaeological field work in the County has been conducted for private and public development projects and by the U.S. Forest Services for lands within its jurisdiction; therefore, only about 10 percent of the County has been surveyed.

The lifeways and material culture of the three groups occupying the County were very similar in nature. Typically villages were located on ridges and higher ground near sources of water. However, other types of sites were located in various geographical settings, depending on the availability of resources (plants, wildlife, lithic material). Permanent houses were typically conical in shape and covered with brush or earth. Sweathouses and dancehouses are indicative of more recent occupation. All groups subsisted on a varied assortment of fish, game, and plants. Acorns were a staple throughout most of the territory; other materials were used for food, medicinal, and manufacturing purposes. Commonly hunted game included deer, bear, mountain lions, and rabbits.

The Native American populations within the County remained relatively untouched during the early days of European exploration and settlement-the Native American population Statewide was estimated to be 280,000 to 340,000 at the time of European contact. During the height of the Gold Rush (1845-1855), the Native American culture was almost completely

decimated, reducing it to some 50,000 persons. The groups within the county were adversely affected because of their proximity to major Gold Rush activity.

Environmental Consequences

The effects of the Proposed Action on cultural and historical resources are compared to conditions under the No Action Alternative:

Proposed Action: The Proposed Action does not include any ground disturbing activities and therefore would have no direct effects to cultural resources or historic properties.

The potential indirect effects include future development and land use changes within the APE. The APE is defined as defined as EID's existing federal service area. Land use planning and development decisions within the APE are made by local agencies as prescribed by El Dorado County's 2004 General Plan and are beyond the range of Reclamation's Section 106 responsibilities (American River Division EIS, 2005). Future changes to EID's federal service area (e.g. inclusions) will need to consider the effects to cultural resources and historic properties and will be subject to Section 106 compliance.

No Action: Impacts to cultural resources and historic properties are identical under the No Action alternative compared to the Proposed Action.

Cumulative Effects

The Proposed Action does not result in adverse cumulative effects to cultural resources or historic properties because 1) no construction is required to deliver this water; the water will be conveyed through existing facilities, 2) the water will be delivered to EID's existing service area that is already approved and receiving CVP water, and 3) future changes to EID's service area will be subject to environmental review including Section 106 compliance of the NHPA.

3.8 Climate Change

Increasing effort is being devoted to studying and evaluating the effects of global climate change on western water resources. On a regional scale, the California Department of Water Resources and Reclamation have formed a work team to address water resources related issues of climate change. The mission of the work team is to coordinate with other state and federal agencies to incorporate climate change science into California's water resources planning and management by providing and regularly updating information to the decision making process on potential risks and impacts of climate change, flexibility of existing facilities to accommodate climate change, and possible mitigation measures (DWR Website 2007).

These efforts have lead to even more focused studies to identify potential climate change impacts on state and federal water operations. DWR released the first Progress Report in July 2006 titled "Progress on Incorporating Climate Change into Management of California's Water Resources." Chapter 4 of this Progress Report is entitled "Preliminary Climate Change Impacts Assessment for State Water Project (SWP) and Central Valley Project (CVP) Operations." This analysis provides a preliminary assessment that quantifies impacts for four different scenarios predicted by two global climate models at two carbon

dioxide emission rates. The results of this study indicate that "general shifts in seasonal and annual average runoff … resulted in considerable impacts to SWP and CVP delivery capabilities, especially in the drier scenarios."

Given the potential effects to water resources from climate change, this section considers the issue of climate change relative to the Proposed Action. This assessment addresses climate change from two perspectives: 1) how the Proposed Action may affect global climate change; and 2) how the Proposed Action may be affected by climate change.

Proposed Action Impacts on Global Climate Change

The Proposed Action is the execution of a long-term (40 year) Warren Act Contract for conveyance of non-CVP water through the federal facilities at Folsom Dam. There are no direct impacts to climate change as a result of the Proposed Action. However, there are indirect effects associated with growth inducement that may contribute to additional land use changes and green house gas emissions. However, these changes may or may not occur as an indirect effect of the Proposed Action. There are other factors that can affect land use changes and growth even with the availability of the proposed water supply. These factors can include general economic conditions in the region as well as housing and mortgage markets.

In the context of climate change, there would be no measurable changes in the composition of the atmosphere or in land use associated with the Proposed Action. Therefore, implementation of the Proposed Action will have only minor and immeasurable impacts on climate change.

Impacts of Global Climate Change on the Proposed Action

In order to address how the Proposed Action may be affected by climate change, the following discussion summarizes current ideas on how the Sierra Nevada region may be affected by changing climate. In general, a warming climate will result in a greater share of rainfall and a more rapid melt of the snowpack. As such, more runoff will occur in the winter and early spring and less during the late spring and early summer (DWR 2006).

The changing runoff patterns due to climate change are important to consider when evaluating how the Proposed Action may be affected by global climate change. The Proposed Action requires instream gages to verify that the each source of water is made available for diversion in Folsom Reservoir. These measurement provisions minimize potential impacts caused by climate change because: 1) water conveyed under the Proposed Action is measured and reported monthly to verify its availability, and 2) even if runoff occurs earlier as predicted by current climate change models, this water would only be available during those months when instream flows for each source are measured and demonstrated being introduced into Folsom Reservoir.

Because water is only available when documented by instream flow gages for each source of non-Project water, there are no potential impacts resulting from climate change on the Proposed Action.

Environmental Consequences

The effects of the Proposed Action on climate change are compared to conditions under the No Action Alternative:

Proposed Action: The Proposed Action does not include any change on the composition of the atmosphere and therefore would have no direct effects to climate change. The potential indirect effects include future development and land use changes that could potentially lead to increased green house gas emissions. However, these potential effects are influenced by other conditions outside the scope of the Proposed Action. This makes any measure of growth highly speculative and would likewise make any quantification of green house gas emissions associated with the Proposed Action highly speculative as well.

In addition, water is only available when documented by instream flow gages for each source of non-Project water. Therefore, there are no potential impacts resulting from climate change on the Proposed Action.

No Action: Implementation of the No Action Alternative would have no change on the composition of the atmosphere and therefore would have no direct or indirect effects to climate change.

3.9 Related Laws, Rules, Regulations, and Executive Orders

Executive Order 11990 (Protection of Wetlands)

Executive Order 11990 on Protection of Wetlands calls for each federal agency, in carrying out its ordinary responsibilities, to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Reclamation will not be undertaking or assisting in any new construction in wetlands.

Executive Order 12898 (Environmental Justice)

Executive Order 12898 on Environmental Justice requires that environmental analyses of proposed federal actions address any disproportionately high and adverse human health or environmental effects on minority and low–income communities. Reclamation's responsibility under this order applies equally to Native American programs. In addition, each federal agency must ensure that public documents, notices, and hearings are readily accessible to the public. No disproportionately high or adverse human health or environmental effects on minority and low-income communities have been identified. Mailing notices and distribution of other project information includes property owners and potentially affected persons and institutions without any distinction based on minority or income status.

Executive Order 11988 (Floodplain Management)

Executive Order 11988 on Floodplain Management requires the Corps to provide leadership and take action to: 1) avoid development in the base (100-year) floodplain; 2) reduce the hazards and risks

associated with floods; 3) minimize the impact of floods on human safety, health, and welfare; and 4) restore and preserve the natural and beneficial values of the base flood plain. The Proposed Action is in compliance with this executive order.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) gives the U.S. Secretary of Interior the authority to provide assistance to federal, state, public, or private agencies in developing, protecting, rearing, or stocking all wildlife, wildlife resources and their habitats (16 U.S.C. § 661). Under the FWCA, whenever waters of any stream or other water body are proposed to be impounded, diverted, or otherwise modified by any public or private agency under federal permit, that agency must consult with the USFWS and, in California, the CDFG. Because the Proposed Action would not modify storage in Folsom Reservoir, Reclamation has determined that a Fish and Wildlife Coordination Act Report (CAR) is not required for the Proposed Action.

4.0 Consultation and Coordination

List of Preparers

Brian Deason, Natural Resource Specialist, Bureau of Reclamation, Central California Area Office
Daniel Corcoran, Environmental Review Division Manager, El Dorado Irrigation District

Coordination

Reclamation is aware that EID has worked closely with the CDFG in developing an operations plan for Weber Dam and appropriate instream flows for Weber Creek. The Operations Plan and a letter from CDFG regarding the Project are included in Appendix B.

On November 30, 2004, EID representative Chris Word met with Kathy Mrwoka and Megan Sheely of SWRCB to discuss the scope and content of the Initial Study and proposed Mitigated Negative Declaration.

On February 8, 2005, EID representative Chris Word met with Steven Hust and Roger Trout of the El Dorado County Planning Department. Mr. Hust provided information regarding County land use policies within the Gabbro Soil Plants Ecological Preserve. Mr. Trout provided information regarding land use entitlements in the proposed area of use.

The following agencies were provided the opportunity to review EID's Initial Study and proposed Mitigated Negative Declaration as part of the CEQA process during the April 26, 2005 to May 26, 2005 review period and provide comments:

El Dorado County Planning Department
California Department of Fish and Game
U.S. Fish and Wildlife Service

Reclamation, EID, and NOAA Fisheries held informal coordination meetings on this project on several occasions, but most recently in January 2008.

Reclamation, EID, and FWS held informal coordination meetings on this project on several occasions, but most recently in October 2007.

Field Reviews

On October 5 and 6, 2004, Chris Word and David Witter of EID conducted site visits to Weber Dam, portions of Weber Creek (between Weber Dam and Newtown Road), Farmers Free Ditch Diversion to State Highway 49, and Gold Hill Ditch Diversion and immediately below the diversion on Hangtown Creek. The purpose of the visits was to document conditions at the diversions and general environmental conditions at and downstream of the diversion structures.

On December 13 and 14, 2004, EID personnel conducted a survey of Weber and Hangtown Creeks to document diversions from the streams that might deplete the quantities of water for which EID is seeking a Warren Act contract to divert at Folsom Reservoir.

In December 2004, Reclamation personnel conducted a stream survey of Weber Creek to become familiar with the existing site conditions.

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Appendix A

Draft Long-term Warren Act Contract for Conveyance of non-Project Water between the United States and El Dorado Irrigation District

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT FOR CONVEYANCE OF NON-PROJECT WATER BETWEEN THE UNITED STATES AND EL DORADO IRRIGATION DISTRICT

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT FOR CONVEYANCE OF NON-PROJECT WATER
BETWEEN THE UNITED STATES
AND
EL DORADO IRRIGATION DISTRICT

THIS CONTRACT, made this _____ day of _____, 2008, pursuant to the Act of June 17, 1902 (32 Stat. 388), as amended and supplemented; the Act of February 21, 1911 (36 Stat. 925); Section 305 of the Act of March 5, 1991 (106 Stat. 59); and Title XXXIV of the Act of October 30, 1992, the Central Valley Project Improvement Act (106 Stat. 4706), all collectively hereinafter referred to as the Federal Reclamation laws, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, acting through the Bureau of Reclamation, hereinafter referred to as the Contracting Officer, and the EL DORADO IRRIGATION DISTRICT, hereinafter referred to as the Contractor;

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the United States has constructed and is operating the Central Valley Project (Project), California, for diversion, storage, carriage, distribution and beneficial use, flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

WHEREAS, the Contractor has or will acquire a supply of Non-Project Water and has requested that the United States convey said Non-Project Water through Excess Capacity in Project Facilities for municipal and industrial (M&I) purposes; and

WHEREAS, the Contractor and its customers have relied upon the sources of Non-Project Water, identified in Exhibit B, for more than 50 years, and Contractor considers them to be an essential portion of its water supply; and

WHEREAS, the United States is willing to convey said Non-Project Water to the Contractor through Excess Capacity in Project Facilities, and that the conveyance of Non-Project Water by the United States through the Project Facilities, in accordance with the terms and conditions of this Contract, will not be detrimental to the water service of the Project; and

WHEREAS, the Contractor and Contracting Officer recognize that this Contract does not grant any permission or entitlement to the Contractor to extract or divert from its sources the Non-Project Water supply conveyed pursuant to this Contract; and

WHEREAS, the United States will consider, in good faith, the Contractor's requests for future renewal of this Contract, to the extent that Excess Capacity in Project Facilities exists at the time of renewal, and to the extent that renewal of this Contract would not contravene then-applicable law, including but not limited to the Federal Reclamation laws and 43 U.S.C. Sections 523-525;

NOW, THEREFORE, in consideration of the covenants herein contained, the parties hereto agree as follows:

DEFINITIONS

1. When used herein, the term:

(a) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(b) "Contracting Officer" shall mean the Secretary of the Interior's (Secretary) duly authorized representative acting pursuant to this Contract or applicable Reclamation law or regulation;

(c) "Contractor's Point of Delivery" shall mean the Folsom Lake Raw Water Pump Station on the south shore of the Folsom Reservoir or any replacement thereof;

(d) "Excess Capacity" shall mean the capacity of the Project Facilities not needed to store and/or convey Project Water as determined by the Contracting Officer;

(e) "M&I Water" shall mean all uses of Non-Project Water for other than the commercial production of agricultural crops or livestock, including domestic use incidental thereto;

(f) "Non-Project Water" shall mean water acquired by or available to the Contractor from the source(s) identified in Exhibit B, attached hereto and incorporated herein by reference;

(g) "Project" shall mean the Central Valley Project owned by the United States and operated by the Department of the Interior, Bureau of Reclamation;

(h) "Project Facilities" shall mean the Folsom Reservoir;

(i) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the United States in accordance with the statutes authorizing the Project and in

accordance with the terms and conditions of applicable water rights permits and licenses acquired by and/or issued to the United States pursuant to California law;

(j) "Rates" shall mean the payments determined annually by the Contracting Officer in accordance with the then-current applicable water ratesetting policies for the Project;

(k) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative;

(l) "Water Service Contract" shall mean Contract No. 14-06-200-1357A between the United States and the Contractor, or in any amendment, extension, or renewal thereof, for a supply of Project Water;

(m) "Year" shall mean the period March 1 of each Calendar Year through the last day of February of the following Calendar Year, both dates inclusive.

TERM OF CONTRACT

2. (a) This Contract shall become effective on March 1, 2008, and shall remain in effect through February 29, 2048, unless terminated by operation of law or by mutual agreement of the parties hereto. Provided, that upon 30 days' advance written notice to the Contractor, this Contract may also be terminated by the Contracting Officer at an earlier date, if the Contracting Officer determines that the Contractor has not been complying with one or more of the terms and conditions of this Contract; Provided further, that the Contracting Officer may make a determination not to terminate this Contract if the Contractor can show full compliance or a time schedule for compliance that is satisfactory to the Contracting Officer within the 30-day notice period.

(b) The Contractor shall promptly notify the Contracting Officer if and when the Contractor ceases to have any right to the use of the Non-Project Water being conveyed pursuant to this Contract.

CONVEYANCE, POINTS OF DELIVERY, AND MEASUREMENT OF NON-PROJECT WATER

3. (a) The Contractor may cause up to 4,560 acre-feet of Non-Project Water each Year to be introduced into the Folsom Reservoir from the source(s) identified in Exhibit B. The United States shall convey said water to the Contractor's Point of Delivery through Excess Capacity in Project Facilities in accordance with a schedule, or any revision or revisions thereof, submitted by the Contractor and approved by the Contracting Officer during the term hereof. If at any time the Contracting Officer determines that there will not be Excess Capacity in Project Facilities sufficient to receive, transport, and convey the Non-Project Water in accordance with the approved schedule, the Contracting Officer shall so notify the Contractor in writing. Within 24 hours of said notice, the Contractor shall revise its schedule accordingly.

(b) The quantity(ies) of Non-Project Water conveyed to the Contractor through Project Facilities in any 30-day period shall not exceed the quantity of Non-Project Water previously introduced into the Folsom Reservoir by the Contractor. The Contractor will be responsible to forgo diversions or to make releases under its State water rights, and any permits or approvals issued by the California State Water Resources Control Board (SWRCB) relating to those rights to divert the natural flow of tributaries of the American River and/or from Contractor's upstream reservoirs, of the quantity of water that equals the quantity that the Contractor has scheduled to introduce into the Folsom Reservoir, including the conveyance loss(es) identified in Exhibit B.

(c) Exhibit B may be modified or replaced to reflect any changes to the source(s) of Non-Project Water or the quantity(ies) of conveyance loss(es), as determined by the Contracting Officer based on operational history, without amending this Contract.

(d) The Non-Project Water shall be used for M&I purposes only.

(e) Non-Project Water that is introduced into the Folsom Reservoir by the Contractor, and remains there for less than 30 days shall not be deemed unused water available to the United States for Project purposes. Conversely, Non-Project Water that is introduced into the Folsom Reservoir by the Contractor and remains there for 30 days or more shall be deemed to be unused water available to the United States for Project purposes. Non-Project Water delivered to Project Facilities shall be accounted for on a "first-in, first-out." Similarly, Non-Project Water that is introduced into the Folsom Reservoir but not conveyed prior to the expiration of this Contract shall also be deemed unused water available to the United States for Project purposes.

(e.1) In the event it becomes necessary for the Contracting Officer to spill water from the Folsom Dam for flood control or any other purpose, the quantity of water first obligated and/or spilled shall be deemed to be the Contractor's Non-Project Water to the extent that such water has been and/or is being delivered into the Folsom Reservoir: Provided, That the Contracting Officer will to the extent possible inform the Contractor by written notice, or otherwise, of any impending obligation or spill from the Folsom Reservoir; Provided further, That to the extent the Contractor has Non-Project Water stored in the Folsom Reservoir and/or being delivered to the Folsom Reservoir after the Contractor has been so informed, such water so stored and/or being delivered shall be delivered to the Contractor at the Contractor's request to

the extent the United States is able to do so as conclusively determined by the Contracting Officer.

(f) The Contractor shall be responsible for the acquisition and payment of all electrical power and associated transmission service charges required to pump the Non-Project Water at the Contractor's Point of Delivery. Conveyance of Non-Project Water pursuant to this Contract will not be supported with Project-use power.

(g) Non-Project Water conveyed by the United States to the Contractor pursuant to this Contract will be conveyed to the Contractor's Point of Delivery, and/or any other additional point or points of delivery as may be mutually agreed to in writing by the Contracting Officer and the Contractor.

(h) The Contractor shall utilize the Non-Project Water conveyed pursuant to this Contract in accordance with all requirements of any applicable Biological Opinion(s).

(i) All Non-Project Water conveyed to the Contractor pursuant to this Contract shall be measured and recorded with equipment furnished, installed, operated, and maintained by the Contractor. Upon request by the Contracting Officer, the Contractor shall investigate the accuracy of such measurements and shall take all necessary steps to adjust any errors appearing therein.

SCHEDULING AND REPORTING OBLIGATIONS OF THE CONTRACTOR

4. (a) On or before each March 1, or at such other times as the Contracting Officer determines to be necessary, the Contractor shall submit to the Contracting Officer a written schedule, satisfactory to the Contracting Officer, showing the dates and estimated monthly quantities of Non-Project Water to be introduced into the Folsom Reservoir and conveyed by the

United States to the Contractor pursuant to this Contract for the upcoming Year. During each month, the Contractor will revise said schedule if necessary to reflect the actual quantity(ies) of Non-Project Water introduced into the Folsom Reservoir and conveyed by the United States to the Contractor pursuant to this Contract.

(b) For each month, before the 10th day of the succeeding month, the Contractor shall furnish a monthly report of daily operations that is satisfactory to the Contracting Officer which tabulates the Contractor's rights to the natural flow in the South Fork of the American River and its tributaries, the quantity of Non-Project Water introduced into the Folsom Reservoir pursuant to this Contract, and the actual daily quantities of Non-Project Water taken by the Contractor at the Contractor's Point of Delivery. At the same time, the Contractor shall provide the Contracting Officer with operational reports demonstrating that the Contractor has operated its upstream reservoirs and other facilities in such a manner as to make sufficient water available in Project Facilities for subsequent delivery of Non-Project Water to the Contractor pursuant to the Contractor's direct diversion and re-diversion rights under its State water rights for each month. The reports shall include the quantity(ies) of releases from the Contractor's upstream storage; the quantity(ies) of foregone diversions; the quantity(ies) of Non-Project Water introduced into Project Facilities; and water flows in Weber Creek downstream from Farmers Free Ditch, in Hangtown Creek downstream from Gold Hill Ditch, in Slab Creek downstream from Summerfield Ditch, and in Weber Creek near the confluence with the South Fork American River. The reports to the Contracting Officer shall be provided in paper and electronic formats approved by the Contracting Officer, with measurements of water in daily mean cubic feet per second and monthly acre-feet. In addition, the Contractor shall provide the Contracting Officer

with copies of all reports on water rights, stream flows and diversions that are required during the term of this Contract by the California SWRCB under License 2184, or by the California Department of Fish and Game under any operating agreement.

(c) The Contractor shall advise the Contracting Officer on or before the 10th calendar day of each month of the actual daily quantities of Non-Project Water taken during the previous month by the Contractor at the Contractor's Point of Delivery pursuant to this Contract.

PAYMENT FOR CONVEYANCE

5. (a) The Rates to be paid to the United States for Non-Project Water conveyed pursuant to this Contract are set forth in Exhibit A and are subject to annual adjustment pursuant to the then-current M&I Ratesetting Policy for the Project to cover all costs incurred from the conveyance of Non-Project Water.

(b) By January 31 of each Calendar Year, the Contracting Officer shall provide the Contractor with the final Rates to be in effect for the upcoming Year, and such notification shall revise Exhibit A without amending this contract.

(c) The Contractor shall pay for Non-Project Water conveyed pursuant to this Contract at the cost-of-service rate as calculated in accordance with the then-current M&I Ratesetting Policy for the Project.

(d) At the time the Contractor submits an initial schedule for the conveyance of Non-Project Water pursuant to subdivision (a) of Article 4 of this Contract, the Contractor shall pay the Contracting Officer one-half of the total amount payable for the Non-Project Water scheduled to be conveyed for the Year. The Contractor shall pay the remainder of the amount

payable for Non-Project Water scheduled to be conveyed for the Year on or before June 1 of the respective Year. Non-Project Water shall not be conveyed in advance of payment.

(e) All revenues received from the use of Project facilities, pursuant to subdivision (a) of this Article for conveyance of Non-Project M&I water, shall be deposited into the Reclamation fund for use under the terms of the Reclamation Act as provided in Section 3 of the Act of February 21, 1911 (36 Stat. 925); Provided, that if the Act of February 21, 1911, is amended, superseded, or replaced, any new provisions addressing the distribution of revenues will apply to this Contract at the earliest possible date under the law.

(f) No refund shall be made by the United States to the Contractor of the payments made for conveyance of Non-Project Water introduced into the Folsom Reservoir which remains in said reservoir for more than 30 days as described in subdivision (e) of Article 3.

(g) If at any time the Contractor diverts more Non-Project Water from Project Facilities than the quantity that was introduced pursuant to subdivision (b) of Article 3 of this Contract, that additional amount of Non-Project Water shall be deemed Project Water for M&I purposes, and payment shall be made at the applicable rate identified in the Contractor's Water Service Contract. Further, this Project Water will be deducted from the quantity of Project Water to which the Contractor is entitled under the Contractor's Water Service Contract.

(h) If the conditions identified in subdivision (g) of this Article arise, and it is determined by the Contracting Officer that the Contractor has utilized all of its Project Water available under the Contractor's Water Service Contract, the Contractor shall release additional Non-Project Water to be introduced into the Folsom Reservoir which is sufficient to equal the quantity of water actually used, including the quantity(ies) of conveyance loss(es) specified in

Exhibit B, and shall pay for this additional Non-Project Water at the Rates identified in Exhibit A.

UNITED STATES NOT RESPONSIBLE FOR CONVEYANCE OF NON-PROJECT WATER

6. The United States shall not be responsible for the control, care, or distribution of the Non-Project Water before it is introduced into the Folsom Reservoir or after it is conveyed to the Contractor's Point of Delivery.

ADJUSTMENTS

7. If the Contracting Officer determines the quantity of Non-Project Water conveyed to the Contractor pursuant to this Contract is less than the quantity for which the Contractor would otherwise have been required to pay, the amount of any overpayment by the Contractor shall be applied first to any accrued indebtedness arising out of this Contract then due and owing to the United States by the Contractor. Any amount of such overpayment then remaining shall be refunded or credited to the Contractor, as directed by the Contractor.

UNITED STATES NOT LIABLE

8. The Contractor hereby releases and agrees to defend and indemnify the United States and its officers, agents, and employees from every claim for damage to persons or property, direct or indirect, resulting from the Contractor's performance of this Contract, including the introduction of Non-Project Water into the Folsom Reservoir and the diversion and/or extraction of Non-Project Water from Project Facilities. The Contractor further releases the United States and its officers, agents, and employees from every claim for damage to persons or property, direct or indirect, resulting from the Contracting Officer's determinations of the amount of Excess Capacity available in Project Facilities for the conveyance of Non-Project Water to the

Contractor, and any legal or physical inability by the Contractor to extract or divert from its source(s) any of the Non-Project Water. Nothing contained in this Article shall be construed as an assumption of liability by the Contractor with respect to such matters.

OPINIONS AND DETERMINATIONS

9. (a) Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly reserve the right to relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the expressed and implied provisions of this Contract, the laws of the United States and the State of California, and the rules and regulations promulgated by the Secretary. Such determinations shall be made in consultation with the Contractor to the extent reasonably practicable.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

10. In addition to all other payments to be made by the Contractor pursuant to this Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor, for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Contract plus indirect costs in accordance with applicable Reclamation policy and

procedures. All such amounts referred to in this Article shall not exceed the amount agreed to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

WATER CONSERVATION

11. Prior to the delivery of water provided from or conveyed through Federally-constructed or Federally-financed facilities pursuant to this Contract, the Contractor shall develop a water conservation plan, as required by Section 210(b) of the Reclamation Reform Act of 1982 and Part 427.1 of the Water Conservation Rules and Regulations effective January 1, 1998.

MEDIUM FOR TRANSMITTING PAYMENTS

12. (a) All payments from the Contractor to the United States under this Contract shall be by the medium requested by the United States on or before the date payment is due. The required method of payment may include checks, wire transfers, or other types of payment specified by the United States.

(b) Upon execution of the Contract, the Contractor shall furnish the Contracting Officer with the Contractor's taxpayer's identification number (TIN). The purpose for requiring the Contractor's TIN is for collecting and reporting any delinquent amounts arising out of the Contractor's relationship with the United States.

CHARGES FOR DELINQUENT PAYMENTS

13. (a) The Contractor shall be subject to interest, administrative and penalty charges on delinquent payments. If a payment is not received by the due date, the Contractor shall pay an interest charge on the delinquent payment for each day the payment is delinquent beyond the due date. If a payment becomes 60-days delinquent, in addition to the interest charge, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. If a payment is delinquent 90 days or more, in addition to the interest and administrative charges, the Contractor shall pay a penalty charge for each day the payment is delinquent beyond the due date, based on the remaining balance of the payment due at the rate of 6 percent per year. The Contractor shall also pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the *Federal Register* by the Department of the Treasury for application to overdue payments or the interest rate of 0.5 percent per month. The interest charge rate will be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied first to the penalty charges, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

PROTECTION OF WATER AND AIR QUALITY

14. (a) Project facilities used to make available and deliver water to the Contractor shall be operated and maintained in the most practical manner to maintain the quality of the water at the highest level possible as determined by the Contracting Officer: Provided, That the United States does not warrant the quality of the water delivered to the Contractor and is under no obligation to furnish or construct water treatment facilities to maintain or improve the quality of water delivered to the Contractor.

(b) The Contractor shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California; and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities necessary for the delivery of water by the Contractor; and shall be responsible for compliance with all Federal, State, and local water quality standards applicable to surface and subsurface drainage and/or discharges generated through the use of Federal or Contractor's facilities or Project Water provided by the Contractor within the Contractor's Project Water Service Area.

(c) This Article shall not affect or alter any legal obligations of the Secretary to provide drainage or other discharge services.

(d) If it is determined by the Contracting Officer that the quality of the source of the Non-Project Water, identified in Exhibit B, conveyed pursuant to this Contract will significantly degrade the quality of Project Water in the Folsom Reservoir, the Contractor, upon receipt of written notice from the Contracting Officer, shall arrange for the immediate termination of the introduction of such source of Non-Project Water into Project Facilities.

GENERAL OBLIGATION--BENEFITS CONDITIONED UPON PAYMENT

15. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due pursuant to this Contract is a condition precedent to receiving benefits under this Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor is in arrears in the advance payment of water rates due the United States. The Contractor shall not deliver water under the terms of this Contract for lands or parties which are in arrears in the advance payment of water rates levied or established by the Contractor.

COMPLIANCE WITH FEDERAL RECLAMATION LAWS

16. (a) The parties agree that the delivery of water or the use of Federal facilities pursuant to this Contract is subject to Federal Reclamation law, as amended and supplemented, and the rules and regulations promulgated by the Secretary under Federal Reclamation law.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the expressed and implied provisions of this Contract, the laws of the United States and the State, and the rules and regulations promulgated by the Secretary. Such determinations shall be made in consultation with the Contractor.

EQUAL EMPLOYMENT OPPORTUNITY

17. During the performance of this Contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, disability, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, disability, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, disability, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in

Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of paragraphs (1) through (6) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

BOOKS, RECORDS AND REPORTS

18. (a) The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Contract, including the Contractor's financial transactions; water supply data; project operation, maintenance, and replacement logs; project land and rights-of-way use agreements; the water users' land-use (crop census), land-ownership, land-leasing, and water-use data; and other matters that the Contracting Officer may require. Reports shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this Contract shall have the right during office hours to examine and make copies of the other party's books and records relating to matters covered by this Contract.

(b) Notwithstanding the provisions of subdivision (a) of this Article, no books, records, or other information shall be requested from the Contractor by the Contracting Officer unless such books, records, or information are reasonably related to the administration or performance of this Contract. Any such request shall allow the Contractor a reasonable period of time within which to provide the requested books, records, or information.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

19. The expenditure or advance of any money or the performance of any obligation of the United States under this Contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this Contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

20. The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein shall be valid until approved in writing by the other party.

OFFICIALS NOT TO BENEFIT

21. No Member of or Delegate to Congress, Resident Commissioner or official of the Contractor shall benefit from this Contract other than as a water user or landowner in the same manner as other water users or landowners.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

22. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1975 (Public Law 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, *et seq*.) Title III of the Americans with Disabilities Act of 1990, and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines imposed by the United States Department of the Interior and/or Reclamation.

(b) These statutes require that no person in the United States shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from Reclamation on the grounds of race, color, national origin, disability, or age. By executing this Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article, and that the United States reserves the right to seek judicial enforcement thereof.

(d) Complaints of discrimination against the Contractor shall be investigated by the Contracting Officer's Office of Civil Rights.

CHANGES IN CONTRACTOR'S ORGANIZATION

23. While this Contract is in effect, no change may be made in the Contractor's organization, by inclusion or exclusion of lands or by any other changes which may affect the respective rights, obligations, privileges, and duties of either the United States or the Contractor under this

Contract, including, but not limited to, dissolution, consolidation, or merger, except upon the Contracting Officer's written consent.[1]

CONFIRMATION OF CONTRACT

24. The Contractor, after the execution of this Contract, shall furnish to the Contracting Officer evidence that pursuant to the laws of the State of California, the Contractor is a legally constituted entity and the Contract is lawful, valid, and binding on the Contractor. This Contract shall not be binding on the United States until such evidence has been provided to the Contracting Officer's satisfaction.

CONTRACT DRAFTING CONSIDERATIONS

25. Articles 1 through 26 of this Contract have been drafted, negotiated, and reviewed by the parties hereto, each of whom is sophisticated in the matters to which this Contract pertains, and no one party shall be considered to have drafted the stated articles.

NOTICES

26. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Area Manager, Bureau of Reclamation, 7794 Folsom Dam Road, Folsom, California 95630-1799, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Board of Directors of the El Dorado Irrigation District, Attention: General Manager, 2890 Mosquito Road, Placerville, California 95667. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

1 As this standard article pertains to irrigation contracts, and not M&I contracts, the Parties have requested this Article be removed.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

THE UNITED STATES OF AMERICA

By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

EL DORADO IRRIGATION DISTRICT

By: _____
General Manager

Attest:

By: _____
Clerk, El Dorado Irrigation District

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EXHIBIT A

2008 WATER RATES

Central Valley Project Warren Act Contracts,
Municipal and Industrial Water,
Per Acre-Foot

Cost Component	Cost of Service
Water Marketing	$ 3.89
Storage	
O&M	$ 6.67
Capital	$ 5.15
Total Cost of Service	$15.71

WILL BE REPLACED WITH FINAL 2008 RATES WHEN THEY BECOME AVAILABLE

EXHIBIT B

SOURCE(S) OF NON-PROJECT WATER

The sources of Non-Project Water shall be water acquired by the Contractor, or available to the Contractor under its pre-1914 water rights for Slab Creek (Summerfield Ditch), Hangtown Creek (Gold Hill Ditch), and Weber Creek (Farmers' Free Ditch), and from additional water rights in Weber Reservoir (License 2184).

The season of diversion at the Contractor's Point of Delivery shall be limited annually to April 1 through November 15; Provided, That the season for diversion from Hangtown Creek and Weber Creek (including Farmers' Free Ditch and Weber Reservoir) shall be limited annually to May 15 through November 15.

For the purposes of this Contract, the "Conveyance Loss" shall be 15 percent.

The amount of Non-Project Water made available for diversion at the Contractor's Point of Delivery shall be the sum of:

1) The quantity of Non-Project Water measured at the lower Weber Creek gage (Gage W-5). This quantity represents the amount of Non-Project Water made available from the combined sources of Weber Dam (Gage W-3), Weber Creek (Gage W-4), and Hangtown Creek (Gage H-4). Provided, That the daily maximum amount of Non-Project Water for which the Contract shall be credited for diversion at the Contractor's Point of Delivery under the Hangtown Creek and Weber Creek water rights shall not exceed the total of: the releases measured at Gage W-3 (less Conveyance Loss), plus 6.74 acre-feet (af) per day for Hangtown Creek, plus 8.43 acre-feet per day for Farmers Free Ditch[1]; and

2) The quantity of Non-Project Water measured at the Slab Creek gage (Gage S-42), less the Conveyance Loss; Provided, That the daily maximum amount of Non-Project Water for which the Contractor shall be credited for diversion at the Contractor's Point of Delivery under the Slab Creek water right shall not exceed 16.86 acre-feet per day[2]; Provided further, That when the flow in Slab Creek is less than 4 cubic feet per second (cfs), no water shall be made available for diversion by the Contractor from Slab Creek.

---

1 Calculation for Maximum acre-feet per day = **[{Weber Reservoir Releases + 4 cfs (Hangtown Creek) + 5 cfs (Weber Creek)} x {1 - Conveyance Loss} x {1.9835 (af/day)/cfs)}]**

2 Calculation for Maximum acre-feet per day = **[{10 cfs (Slab Creek) x (1-Conveyance Loss)} x {1.9835 (af/day)/cfs}]**

Appendix B

Operations Agreement with the State of California

And the

Memorandum of Understanding the California Department of Fish and Game

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MEMORANDUM OF UNDERSTANDING
by and between the
EL DORADO IRRIGATION DISTRICT
and the
CALIFORNIA DEPARTMENT OF FISH AND GAME
regarding the

PROPOSED OPERATION OF WEBER RESERVOIR ON WEBER CREEK IN EL DORADO COUNTY AND THE PROPOSED PETITION TO CHANGE PLACE AND PURPOSE OF USE, AND TO ADD FOLSOM RESERVOIR AS POINT OF REDIVERSION UNDER THE WEBER RESERVOIR WATER RIGHT LICENSE

THIS MEMORANDUM OF UNDERSTANDING ("MOU") is made and entered into on this _____ day of September, 2003, by and between the California Department of Fish and Game ("DEPARTMENT") and the El Dorado Irrigation District ("EID"), collectively referred to herein as "Parties."

RECITALS

A. EID owns and operates Weber Reservoir on Weber Creek in El Dorado County, which is tributary to the American River and Folsom Reservoir;

B. EID diverts to storage at Weber Reservoir under water right License No. 2184 (Application 1692), issued by the Division of Water Resources of the Department of Public Works, predecessor to the State Water Resources Control Board ("SWRCB");

C. License No. 2184 authorizes EID to divert 1125 acre-feet of water to storage from about October 15 to about May 15 of each season, for irrigation uses within EID's service area, as it existed on April 8, 1927;

D. Water diverted to storage at Weber Reservoir is an important source of EID's overall water supply, a potential source of water to benefit fish and wildlife and other natural resources in Weber Creek downstream of Weber Reservoir, and a valuable asset to El Dorado County;

E. EID and the California Attorney General, on behalf of the People of the State of California, have negotiated the terms of an agreement in People v. El Dorado Irrigation District, El Dorado Superior Court Case No. PO2CRM0144 ("Plea Agreement"), which includes EID's commitment to implement the "Weber Reservoir Flow and Restoration Plan;"

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F. The "Weber Reservoir Flow and Restoration Plan" contemplates modified operations at Weber Reservoir, involving changes to historical Reservoir release and bypass schedules, for the benefit of fish and wildlife and other natural resources in Weber Creek downstream of Weber Reservoir;

G. The Plea Agreement recognizes that, in order to implement the "Weber Reservoir Flow and Restoration Plan," EID must obtain approval from the SWRCB to: (a) redivert water released from Weber Reservoir at EID's Folsom Reservoir water treatment plant; (b) expand the authorized purposes of use of water released from Weber Reservoir to include fish, wildlife and recreation uses in Weber Creek, and municipal, industrial and fire protection uses within EID's service area: and (c) to use water diverted to storage under License 1692 within EID's existing service in El Dorado Hills;

H. To implement these changes to License 1692, EID must file a Petition for Change with the SWRCB pursuant to Water Code Sections 1700, et seq.;

I. Pursuant to Water Code Sections 1700, et seq., EID must demonstrate to the SWRCB that the water use changes contemplated in the Petition for Change and the "Weber Reservoir Flow and Restoration Plan" will not unreasonably affect fish and wildlife resources in Weber Creek, and will comply with applicable requirements of the Fish and Game Code;

J. The DEPARTMENT is the trustee for fish and wildlife resources of the State, and as such has jurisdiction to protect fish and wildlife resources in Weber Creek; and

K. Representatives of the DEPARTMENT have been involved in the development of the "Weber Reservoir Flow and Restoration Plan" and agree that implementation of the "Weber Reservoir Flow and Restoration Plan" will benefit fish and wildlife resources in Weber Creek downstream of Weber Reservoir.

NOW, THEREFORE, in consideration of the foregoing recitals and mutual covenants and conditions contained herein, the DEPARTMENT and EID agree as follows:

1. **Recitals incorporated.** The Parties agree that the foregoing recitals are true and correct and are incorporated herein by reference.

2. **"Weber Reservoir Flow and Restoration Plan" Incorporated.** The "Weber Reservoir Flow and Restoration Plan," attached hereto as Exhibit A, is incorporated herein by reference.

3. **EID Petition for Change.** EID agrees to file a Petition for Change with the SWRCB that is materially similar to the PROPOSED PETITION FOR CHANGE attached hereto as Exhibit B, and incorporated herein by reference. EID will request that the SWRCB condition its approval of the Change Petition on EID's compliance with the "Weber Reservoir

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Flow and Restoration Plan."

a. The EID Petition for Change will request that the SWRCB modify License 2184 by:

(i) adding Folsom Lake as a point of rediversion;

(ii) adding fish, wildlife and recreation uses within Weber Creek as authorized purposes of use;

(iii) adding municipal, industrial and fire protection uses as authorized purposes of use within EID's service area;

(iv) adding EID's entire service area, including El Dorado Hills, as authorized places of use.

b. EID will comply with all applicable requirements of state and federal law with respect to the Petition for Change, including applicable requirements of the California Environmental Quality Act.

c. Prior to filing the Petition for Change with the SWRCB, EID will seek the DEPARTMENT'S written concurrence that the final Petition for Change to be submitted to the SWRCB is materially similar to the PROPOSED PETITION FOR CHANGE attached hereto as Exhibit B. For purposes of this MOU, "materially similar" means that the final Petition for Change and the PROPOSED PETITION FOR CHANGE are in agreement with respect to all terms, provisions and conditions that may reasonably be expected to affect fish and wildlife resources in Weber Creek. The DEPARTMENT shall not unreasonably withhold its concurrence that the final Petition for Change and PROPOSED PETITION FOR CHANGE are materially similar.

4. **DEPARTMENT to Support EID Petition for Change.** The DEPARTMENT agrees to support EID's Petition for Change, and to not file a Protest with the SWRCB with respect to said Petition for Change, provided that the Petition for Change is materially similar to the PROPOSED PETITION FOR CHANGE attached hereto as Exhibit B. The DEPARTMENT'S support of EID's Petition for Change is based on the following findings:

a. The Petition for Change to EID's water right License 2184 for Weber Reservoir, including the measures provided in the "Weber Reservoir Flow and Restoration Plan," will provide additional benefits to fish and wildlife resources in Weber Creek, as compared to existing conditions.

b. The proposed Petition for Change to EID's water right License 2184, including the measures provided in the "Weber Reservoir Flow and Restoration Plan," comply with all applicable requirements of the Fish and Game Code, including but not limited to Fish

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and Game Code Sections 1600, et seq., Section 5937, and Sections 2050 et seq.

5. **Term.** This MOU shall be effective from the date first written above, and shall remain in effect unless modified or terminated by mutual agreement of the Parties.

6. **Construction and Interpretation.** It is agreed and acknowledged by the Parties that this MOU has been arrived at through negotiation, and that each party has had a full and fair opportunity to revise the terms of the MOU. Consequently, the normal rule of construction that any ambiguities are to be resolved against the drafting party shall not apply in constructing or interpreting this MOU.

8. **Severability.** The invalidity, illegality, or unenforceability of any provision of this MOU shall not render the other provisions unenforceable, invalid, or illegal.

9. **Governing Law. This MOU shall be interpreted and enforced pursuant to the laws of the State of California.**

10. **Modifications.** This MOU can only be modified by a written instrument executed by both Parties.

11. **Entire MOU.** This MOU contains the entire understanding of the Parties related to their interests, obligations, and rights in connection with the subject matter set forth herein. All prior communications, negotiations, stipulations, and understandings, whether written or oral, are of no force or effect, and are superceded, except as referred herein.

12. **Assigns and Successors.** This MOU shall be binding upon, and inure to the benefit of, the assigns or successors-in-interest of the Parties herein.

13. **No Third Party Beneficiaries.** The Parties to this MOU do not intend to create any third party beneficiaries to this MOU, and expressly deny the creation of any third party beneficiary rights hereunder toward any person or entity.

14. **Time.** Time is of the essence in the performance of each and every term of this MOU.

15. **Waiver.** The waiver or failure to declare a breach as a result of the violation of any term of this MOU shall not constitute a waiver of that term or condition, and shall not provide the basis for a claim of estoppel, forgiveness, or waiver by any party to that term or condition.

16. **Captions.** The paragraph captions in this MOU are for convenience only and shall not be used in construing the MOU.

17. **Additional Documents.** Each party agrees to make, execute, and deliver any and

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all documents and to join in any application or other action reasonably required to implement this MOU.

18. **Notice.** Any and all communications and/or notices in connection with this MOU shall be hand delivered or sent by United States first class mail, postage prepaid, and addressed as follows:

To: EID

Tom Cumpston
General Counsel
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
(530) 622-4513

To: DEPARTMENT

Steve Sawyer
Staff Counsel III
Department of Fish and Game
P.O. Box 944209
Sacramento, CA 94244
(916) 324-5662

The Parties may change the foregoing addresses by providing written notice in compliance with this paragraph.

IN WITNESS WHEREOF, the DEPARTMENT and EID have executed this MOU as of the day and year first written above.

Date: _____

Banky Curtis, Regional Manager, Region 2
California Department of Fish and Game

Date: Sept. 15, 2003

Ane Deister
General Manager
El Dorado Irrigation District

Appendix C

License Approving Changes in Point of Diversion, Place of Use and Purpose of Use

State Water Resources Control Board

Division of Water Rights
1001 I Street, 14th Floor ♦ Sacramento, California 95814 ♦ 916.341.5300
P.O. Box 2000 ♦ Sacramento, California 95812-2000
Fax: 916.341.5400 ♦ www.waterrights.ca.gov

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

MAR 25 2008

In Reply Refer
to:KDM:1692

Thomas D. Cumpston
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Dear Mr. Cumpston:

AMENDED LICENSE 2184 (APPLICATION 1692) - NORTH FORK WEBER CREEK TRIBUTARY TO WEBER CREEK IN EL DORADO COUNTY

On October 12, 2007, the Division of Water Rights (Division) issued an Order approving the El Dorado Irrigation District (EID) petition for change in the point of diversion, place of use and purpose of use. On October 15, 2007, the Division issued a Notice of Proposed Partial Revocation for License 2184 to remove hydropower as an authorized purpose of use. EID requested a hearing on the proposed partial revocation, but withdrew the hearing request on November 16, 2007. Thus, the partial revocation is now final.

The enclosed Amended License: (1) incorporates the conditions from the October 12 Order; (2) deletes all reference to the hydropower project, including license terms associated solely with operation of the hydropower project; (3) incorporates all prior orders of the State Water Resources Control Board that apply to the EID license; and (4) amends the existing continuing authority and water quality terms in the license to reflect the current common law public trust doctrine as contained in title 23, California Code of Regulations, section 780(a) and (b). Additionally, a threatened and endangered species term has been added.

The enclosed Amended License supersedes the original license. Please retain the enclosed license for your records. The issuance of this Amended License does not change the priority date of the license.

Katherine Mrowka is the senior staff person presently assigned to this matter, and she can be contacted at (916) 341-5363.

Sincerely,

John O'Hagan, For

Victoria A. Whitney
Division Chief

Enclosure

cc: See next page

cc: (w/enclosure)
Robert Donlan
Ellison, Schneider and Harris, LLP
2015 H Street
Sacramento, CA 95814-3109

County Recorder
County of El Dorado
360 Fair Lane
Placerville, CA 95667

Marty Kaiser
U.S. Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825-1898

Stafford Lehr
Department of Fish and Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

Gary Hobgood
Department of Fish and Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

RECEIVED
MAR 2 8 2006

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

Amended License for Diversion and Use of Water

APPLICATION 1692 PERMIT 1053 LICENSE **2184**

THIS IS TO CERTIFY, That

El Dorado Irrigation District
2890 Mosquito Road
El Dorado, CA 95667

has the right to the use of the waters of **North Fork Weber Creek** in **El Dorado County**

tributary to **Weber Creek thence South Fork American River, thence Folsom Lake**

for the purpose of **Municipal, Industrial, Irrigation, Recreational, Fish and Wildlife Preservation and Enhancement, and Fire Protection uses.**

Amended License 2184 supersedes the license originally issued on **March 1, 1941**, and Orders dated **May 1, 1931** and **February 28, 1940**, which was perfected in accordance with the laws of California, the Regulations of the State Water Resources Control Board (State Water Board), or its predecessor, and the terms of **Permit 1053**. The priority of this right dates from **February 27, 1920**. Proof of maximum beneficial use of water under this license was made as of **September 7, 1939** (the date of inspection).

The amount of water to which this right is entitled and hereby confirmed is limited to the amount actually beneficially used for the stated purposes and shall not exceed **one thousand one hundred twenty five (1,125) acre-feet per annum to be collected from October 15 of each year to May 15 of the succeeding year. The maximum withdrawal in any one year shall not exceed one thousand (1,000) acre-feet.**

The capacity of Weber Reservoir shall not exceed 1,125 acre-feet.

THE POINT OF DIVERSION OF SUCH WATER IS LOCATED:

Weber Reservoir Dam - North 27° 32′ East 1,595 feet from the S¼ corner of Section 18, T10N, R12E, MDB&M, being within the NW¼ of SE¼ of said Section 18.

THE POINT OF REDIVERSION OF SUCH WATER IS LOCATED:

Folsom Reservoir Pumping Station - North 25° 06′ East, 2,358 feet from the SW corner of Section 1, T10N, R8E, MDB&M, being within the NW¼ of SW¼ of said Section 1.

A DESCRIPTION OF THE LANDS OR THE PLACE WHERE SUCH WATER IS PUT TO BENEFICIAL USE IS AS FOLLOWS:

Fish and Wildlife Preservation and Enhancement and Fire Protection uses at Weber Reservoir within SW¼ of Section 17 and SE¼ of Section 18, T10N, R12E, MDB&M, and Fish and Wildlife Preservation and Enhancement and Recreation uses within North Fork Weber Creek, Weber Creek and South Fork American River from Weber Reservoir Dam to Folsom Reservoir.

Municipal, Industrial, Irrigation, and Fire Protection uses within the boundaries of the El Dorado Irrigation District comprising 30,702 acres as shown on map dated April 8, 1927, filed with the State Water Board, and El Dorado Hills area as shown on map dated January 26, 2006, filed with the State Water Board.

For the protection of fish and wildlife, EID shall:

a. Maintain a minimum of 200 acre-feet of available water in storage at Weber Reservoir as of September 1 of each year for the purpose of satisfying minimum reservoir releases during the months of September, October and November.

b. Within 12 months of the date of this order, EID shall install, maintain, operate and monitor the continuous recording gages located at:

(i) Gage 1 at Snow's Road;
(ii) Gage 2 at the outflow downstream of the release pipe, but upstream of the confluence with spillway waters.
(iii) Stage height (S1) of the reservoir to be located upstream of the spillway where stage height is not significantly impacted by the spillway.

c. Maintain a year-round minimum release schedule from Weber Reservoir to protect and enhance fish, wildlife and recreation in Weber Creek downstream of Weber Reservoir as follows:

(i) Releases will be determined by the following equation when reservoir storage in Weber Reservoir is greater than 200 af:

$Q_{release} = 0.67 \times (Q_{inflow})^{0.5}$
Q_{inflow} = the mean of the preceding calendar month inflow at Gage 1

(ii) To provide opportunity to calculate Q_{inflow}, the new release regime need not be implemented until the eighth day of each new calendar month.

(iii) $Q_{release}$ shall not be less than 1 cubic foot per second (cfs). When the water surface in the reservoir is below the release pipe elevation, $Q_{release}$ = valve open.

d. Maintain a "ramping rate" for changes in releases from Weber Reservoir for the purpose of protecting fish and wildlife resources from adverse impacts caused by sudden change in Weber Creek hydrology. The ramping rate shall be calculated such that manageable releases $Q_{release}$ will not result in changes in Weber Creek instream depth exceeding 0.5 foot depth per hour measured at Gage 2.

e. EID shall report compliance on its website and provide written compliance documentation upon request by the State Water Board, including the following information:

- Gage 1: calendar month mean value, average daily values for current month, historic average daily values;
- Gage 2: calendar month mean values, average daily values for current month, historic average daily values;
- S1: calendar month mean, calendar month final stage values, average daily values for current month, historic average daily values;
- Equation/rules for calculating $Q_{release}$;
- $Q_{release}$ = calculated;
- Spill over the spillway start and stop dates.

Records shall be maintained for a minimum of three years.

f. EID shall implement a pulse flow for the purpose of flushing embedded sediments that resulted from the sediment discharge event of January 30 to March 2, 2001. EID shall conduct the pulse flow event in accordance with the restoration plan and shall report the dates when pulse flow occurred with its triennial Report of Licensee.

Access to the Point of Rediversion on Folsom Dam and Reservoir is subject to the licensee entering into a contract with the U.S. Bureau of Reclamation (Reclamation) for the use of Folsom Reservoir. No water shall be diverted under this license until the contract is executed and a copy delivered to the Chief of the Division of Water Rights. This license is subject to measurement of flows and continuous documentation that rediversion by EID does not exceed quantities released into North Fork Weber Creek, minus conveyance and evaporation losses.

EID shall install, maintain, operate and monitor a continuous recording gage near the confluence with the South Fork American River, at a location mutually acceptable to EID and Reclamation. During periods when EID is releasing water from storage at Weber Reservoir for rediversion at Folsom Lake, EID will maintain daily flow and reservoir release data from this gage. EID and Reclamation will use this data to confirm the amount of water available for rediversion at Folsom Lake, taking into account other accretions to and depletions from North Fork Weber Creek between Weber Dam and the confluence of Weber Creek with the South Fork American River.

The right hereby confirmed to the diversion and use of water is restricted to the point or points of diversion herein specified and to the lands or place of use herein described.

Reports shall be filed promptly by the licensee on the appropriate forms which will be provided for the purpose from time to time by the State Water Board.

Licensee shall allow representatives of the State Water Board and other parties, as may be authorized from time to time by the State Water Board, reasonable access to project works to determine compliance with the terms of this license.

Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this license, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this license with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Licensee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this license and to determine accurately water use as against reasonable water requirement for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by the licensee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution article X, section 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

The quantity of water diverted under this license is subject to modification by the State Water Board if, after notice to the licensee and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that: (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

This license does not authorize any act which results in the taking of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result from any act authorized under this water right, the licensee shall obtain authorization for an incidental take prior to construction or operation of the project. Licensee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this license.

If construction or rehabilitation work is required for the diversion works covered by this license within the bed, channel, or bank of the affected water body, the licensee shall enter into a streambed or lake alteration agreement with the State Department of Fish and Game. Licensee shall submit a copy of the agreement, or waiver thereof, to the Division of Water Rights prior to commencement of work. Compliance with the terms and conditions of the agreement is the responsibility of the licensee.

This license is granted and the licensee accepts all rights herein confirmed subject to the following provisions of the Water Code:

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the State Water Board.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article (of the Water Code) and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY
JOHN O'HAGAN FOR:

Victoria A. Whitney, Chief
Division of Water Rights

Dated: MAR 25 2008

Appendix D

Technical Memorandum - Potential Effect of Diversions on Folsom Reservoir Coldwater Pool

POTENTIAL EFFECT OF DIVERSIONS ON FOLSOM RESERVOIR COLD WATER POOL

El Dorado Irrigation District Folsom Reservoir Water Supply Intake

September 14, 2007

Prepared by: Bill Smith

1.0 Introduction

The El Dorado Irrigation District (EID) has submitted a Petition for Change of Point of Diversion, Place of Use, and Purpose of Use, for four existing water rights to the State Water Resources Control Board (SWRCB). EID is proposing to move the four diversions from their current locations upstream of Folsom Reservoir, to the EID Folsom Reservoir intake structure. **Table 1** lists the timing and magnitude of these diversions.

Table 1 Ditch Diversion Patterns

	Mar (AF)	Apr (AF)	May (AF)	Jun (AF)	Jul (AF)	Aug (AF)	Sep (AF)	Oct (AF)	Total (AF)
Slab Creek (Summerfield Ditch) [1]	81	611	563	414	269	162	143	95	2,338
Hangtown Creek (Gold Hill Ditch [1]		133	156	69	27	22	21	15	443
Weber Creek (Farmers Ditch) [1]		210	329	289	166	68	42	47	1151
Weber Reservoir [2,3]				446	267	146	119	91	956
Total	81	954	1048	1,218	729	398	325	248	4,888

[1] From "EID's Calculations and Rationale for Replacing September 1 with June 1 in Article 5, Subdivision (d) of Contract 06-WC-20-3315", 11/2/2005

[2] Distributed from Jun - Oct based on pattern of sum of other three demands

[3] 956 af in "Wet" years, 0 af in "Dry" years

This memo documents an analysis undertaken to evaluate the potential effects of moving the point of diversion of these diversions on the ability to manage the Cold Water Pool (CWP) in Folsom Reservoir for the benefit of aquatic resources in the American River below Nimbus Dam.

2.0 Folsom Reservoir Temperature Regime and Cold Water Pool Management

2.1 Overview of Folsom Reservoir Temperature Operation

Folsom Reservoir fills during the spring and early summer with snowmelt runoff from the upper American River basin. Early in this period the reservoir is well mixed with a fairly uniform temperature profile from top to bottom. However, as the runoff decreases and the surface of the reservoir heats up, the reservoir stratifies with warmer water near the surface and colder water on the bottom. **Figure 1** illustrates this progression of stratification through the year for 2006.

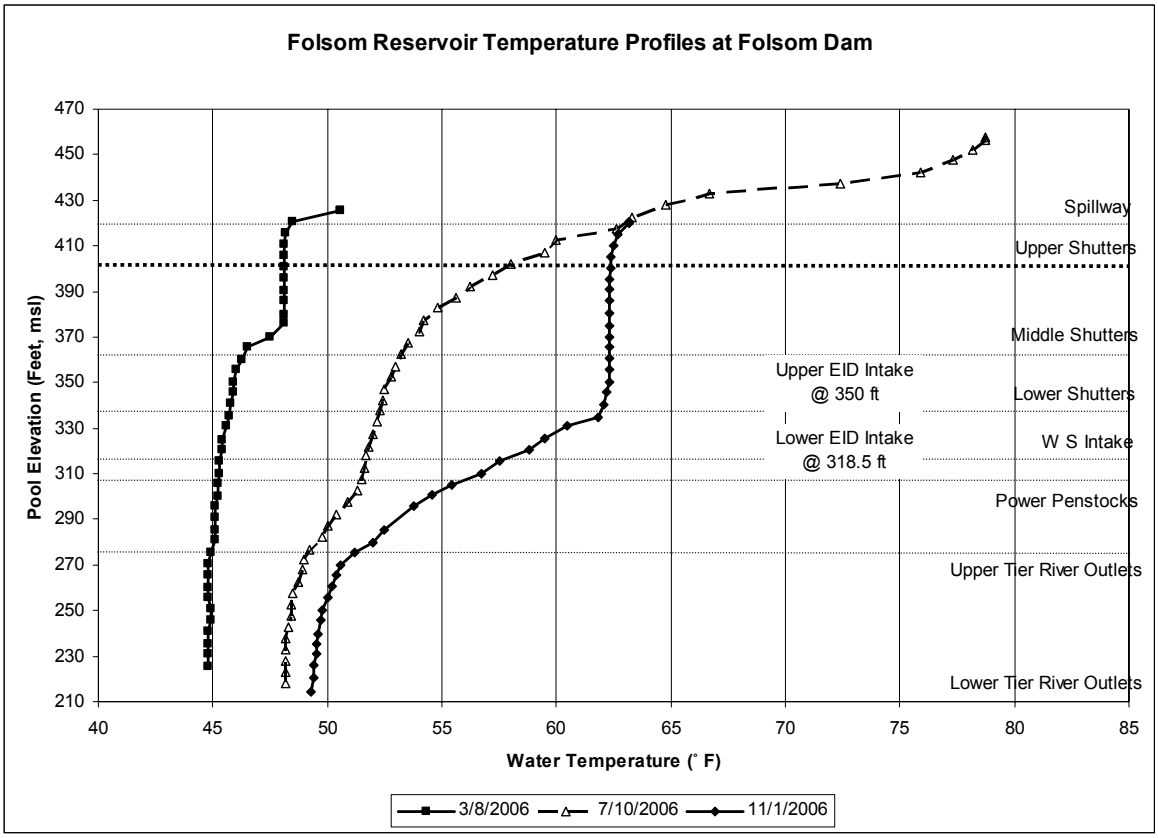

Figure 1 Folsom Reservoir Water Temperature Profiles

Figure 1 also identifies the various Folsom Reservoir elevations from which releases can be made. The power penstocks at Folsom Reservoir, the main release point from the reservoir, are fitted with a shutter system that can selectively withdraw water at multiple elevations, thereby adjusting the water temperature of the release. Management of the Folsom Reservoir CWP involves positioning the shutters to obtain a temperature that is cold enough to meet the temperature requirements for the downstream aquatic resources but high enough to preserve the CWP for use to meet temperature requirements later in the year. With the shutters fully withdrawn the release is directly through the penstocks at a centerline elevation of 307 ft, at a corresponding storage level of 50,400 af. As long as the CWP is above this elevation, the shutters can be adjusted to facilitate releases at temperatures necessary to meet downstream water temperature targets and avoid downstream temperature or power generation impacts.

Once the CWP can not be accessed through the power outlets, the Folsom Dam river outlets can be used for release temperature management. These outlets are used only when absolutely necessary, as water released through the river outlets bypasses the Folsom Power Plant and results in reduced generation. The upper and lower river outlets are at centerline elevations of 278 and 208 ft, respectively. The corresponding storages for these elevations are 20,500 and 6 af.

2.2 Downstream Water Temperature Requirements

Water temperature requirements for the lower American River are specific to the life stage of the species present in the river. For long-term modeling purposes, a set of monthly temperature targets for the lower American River at Watt Avenue has been developed for use in the Automated Temperature Selection Procedure (ATSP). The ATSP is a management tool using temperature models of the Folsom Reservoir and the Lower American River to simulate the "best" use of the Folsom Reservoir CWP for downstream aquatic species for a given set of hydrologic conditions. **Table 2** lists these temperature targets.

Table 2 "Optimal" Temperature Targets in Lower American River at Watt Ave from ATSP

Jan (°F)	Feb (°F)	Mar (°F)	Apr (°F)	May (°F)	Jun (°F)	Jul (°F)	Aug (°F)	Sep (°F)	Oct (°F)	Nov (°F)	Dec (°F)
N/A	N/A	N/A	N/A	64	64	64	64	64	57	56	N/A

Because these target temperatures are at Watt Avenue; the Folsom Reservoir Release temperature needs to be colder to compensate for heating that occurs as the water travels downstream to Watt Avenue. There are no temperature targets identified in the December through April period because the low temperature of Folsom Reservoir releases and the lack of in-river heating (during this period cooling may occur as the water moves downstream) of the water in the Lower American River are sufficiently cool to meet the requirements of all species life stages. For this analysis the CWP is assumed to consist of all water in Folsom Reservoir at or below 60 °F, as suggested by Reclamation (email comments from Jeff Sandberg of Reclamation 8/28/2007) This value will give a conservative estimate of the CWP available in Folsom Reservoir that could be used for the benefit of the downstream aquatic resources.

3.0 Analysis Procedure

If the project reduces the CWP to the point where Reclamation can not meet the preferred Watt Avenue temperature targets, there is the potential for an impact to the downstream aquatic resources. This effect is most likely to occur near the end of September when the CWP is at a relatively low level and the downstream temperature requirements become lower, and require a lower release temperature.

In order to evaluate the potential for the project to cause an impact, this analysis will estimate the change in the CWP, the volume of water below 60 °F in Folsom Reservoir, caused by the changed location of diversions. This volume will then be used to estimate a new water temperature at the centerline of the penstocks as an indicator of the potential effect on river outlet use at the end of September.

A second analysis will estimate an equivalent number of days release for the volume change to the CWP as an indicator of potential impact.

3.1 Folsom Reservoir Temperature Profile Data

The analysis is based on water temperature profile data furnished by Reclamation at six locations in Folsom Reservoir. These locations are:

- Site A 38°47.0107' N; 121°06.3991' W (North Fork arm near Anderson Creek)
- Site B 38°44.1948' N; 121°05.6332' W (Red Buoy in front of EID's intake, South Fork arm)
- Site C 38°44.0027' N; 121°08.6959' W (North Fork arm off Mooney Ridge)
- Site D 38°42.7674' N; 121°07.3176' W (South Fork arm off Mormon Island Dam)
- Site E 38°46.0292' N; 121°07.3141' W (North Fork arm)
- Site Dam 38°42.5401' N; 121°09.3220' W (White buoy in front of dam)

The profiles were taken at irregular intervals of approximately 3-5 weeks from 2002 through 2006. Location B was assumed to represent the temperature profile at the EID water supply intake.

The profiles nearest October 1 each year were selected for use in the analysis. **Figure 2** shows the selected profiles.

As can be seen in Figure 2 the profiles for 2003, 2005, and 2006 have about the same top of CWP elevation. In these years the CWP appears to be sufficient to allow release through the penstocks and still meet the downstream temperature requirements. In 2002 and 2004 the top of the CWP is lower. As noted in section 2.3 a release was made through the river outlets in 2002 but was not made in 2004. River outlet releases are only made when the temperature in the Lower American River at Watt Ave become high enough to impact fall run Chinook salmon spawning. No documentation of why specific operation decisions were not taken was found, only documentation of actions taken.

3.2 Potential Inflow Change Effects on the CWP

The project will reduce upstream diversions, allowing the water to flow downstream into Folsom Reservoir and then be diverted at the existing EID water supply intake. This change in operations could impact temperatures in Folsom Reservoir through two different mechanisms, changed volume of cold water inflow available to develop and sustain the CWP, and any change in inflow temperature due to the increased flow in the upstream reaches of the South Fork and its tributaries.

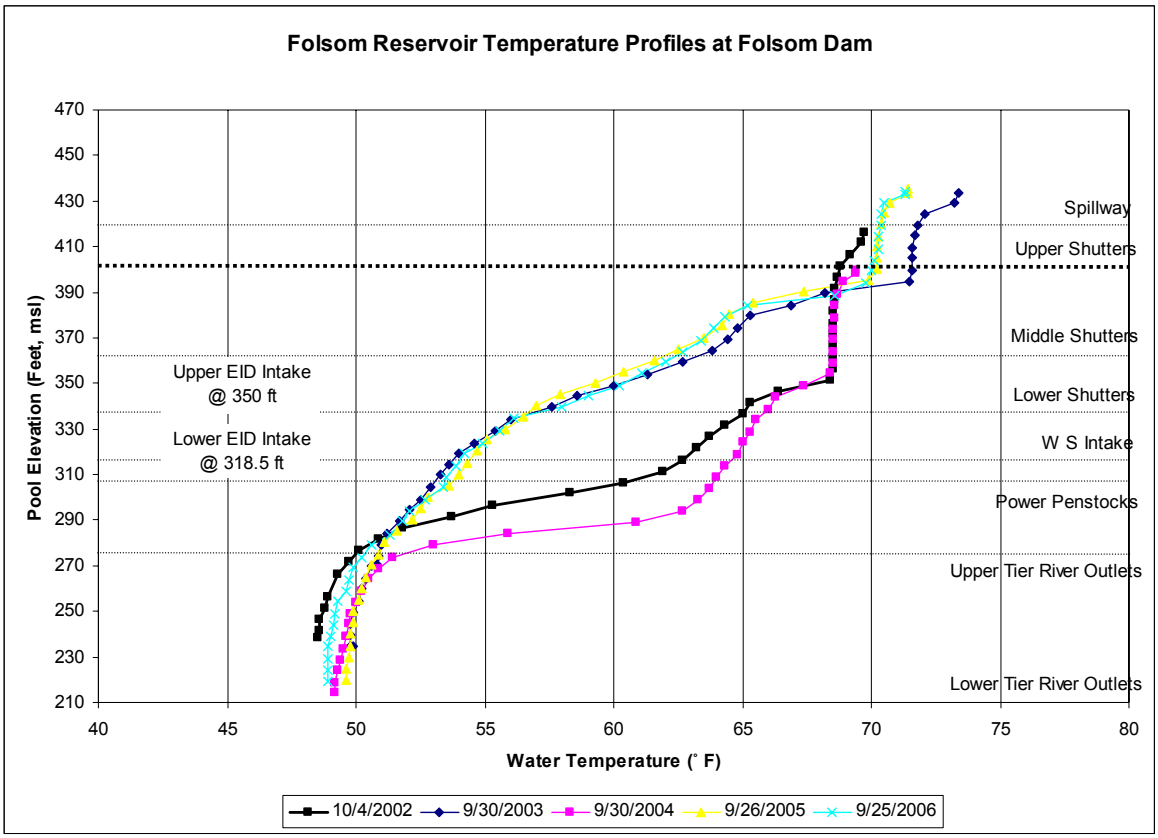

Figure 2. Folsom Reservoir Temperature Profiles near October 1

3.2.1 Increased Inflow Volume and Potential Contribution to the Folsom Reservoir CWP

The reduction in upstream diversion will increase the inflow to Folsom Reservoir by the volume of the diversion. These flows are shown in Table 1. Any of this water that is below 60 ºF could contribute to the CWP in Folsom Reservoir.

The USGS Gage 11446030 - South Fork American River at Pilot Hill has temperature data from August 1999 to the present. The Folsom inflow increase due to this project occurs during the period Mar 1 to Oct 31. **Figure 3** shows the temperature at the gage for these months for the 2002 – 2006 period of analysis.

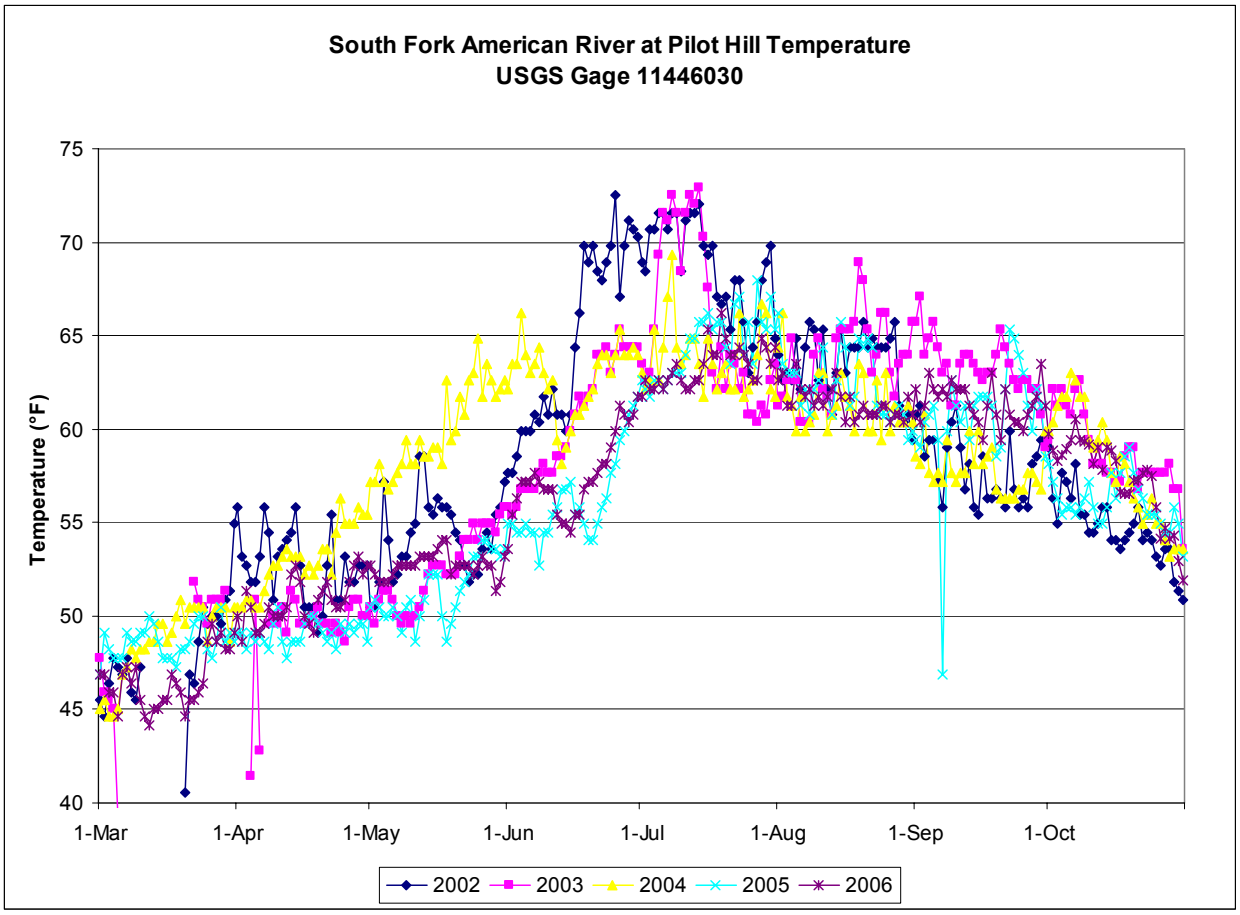

Figure 3. South Fork American River Inflow to Folsom Reservoir Temperature

The impact of this increased inflow on the CWP was estimated by adding up the additional inflow volume for each day during the analysis period that the temperature was less than 60 ºF to get a monthly total increase to the CWP. Since the computation only considers if the temperature is above or below 60 ºF, and not the actual temperature, missing data was filled in by assuming that if the temperatures of the days bordering the missing data was below 60 ºF that the missing data would also be below 60 ºF. There was no missing data where the one of the bordering days was below and one above 60 ºF. The results of this computation are shown in **Table 3**.

Table 3. Additional South Fork American River Inflow to Folsom Reservoir below 60º F

	Mar (AF)	Apr (AF)	May (AF)	Jun (AF)	Jul (AF)	Aug (AF)	Sep (AF)	Total (AF)
2002	81.0	923	405	0.0	0.0	0.0	0.0	1409
2003	81.0	923	405	0.0	0.0	0.0	0.0	1409
2004	81.0	923	405	0.0	0.0	0.0	0.0	1409
2005	81.0	923	405	0.0	0.0	0.0	0.0	1409
2006	81.0	923	405	0.0	0.0	0.0	0.0	1409

3.2.2 Reduced Inflow Temperature

The increased stream flow into Folsom Reservoir caused by moving the diversions from the old points of diversion to Folsom Reservoir may impact the water temperature gain thereby changing the temperature of the water entering Folsom Reservoir. This effect would be very difficult to evaluate due to the dearth of data for existing flows and temperatures in the affected stream reaches. Because this effect is expected to be small, and would extremely difficult to evaluate it was ignored for this analysis.

3.3 Potential Diversion Change Effects

Increasing the existing EID diversion from Folsom Reservoir has the potential to increase the withdrawal of cold water and decrease the CWP volume available for downstream aquatic purposes. The impact of this increased diversion on the CWP was estimated by adding up the additional diversion volume for each day during the analysis period that the temperature was less than 60 ºF to get monthly total increase to the CWP.

The proposed project is to move the point of diversion of the specified water rights from upstream of Folsom Reservoir to the existing EID water supply intake. Per EID, the diversion from Folsom Reservoir lags the foregone upstream diversion by 30 days. This was implemented by shifting the monthly diversion from upstream one month later in the year to represent the diversion at the EID water supply intake. This means that the additional inflow to Folsom Reservoir in March is the additional diversion from Folsom Reservoir in April. **Table 4** summarized the increased inflow and diversion from this project.

Table 4. Additional Folsom Reservoir Inflow and EID Diversion

	Mar (AF)	Apr (AF)	May (AF)	Jun (AF)	Jul (AF)	Aug (AF)	Sep (AF)	Oct (AF)	Nov (AF)	Total (AF)
Assumed New Inflow	81	954	1048	1218	729	398	325	248		5000
Assumed New Diversion		81	954	1048	1218	729	398	325	248	5000

The EID water supply intake withdraws water from Folsom Reservoir at elevations of 350 and 318.5 ft. Approximately 33% of the total EID diversion occurs from the 350 ft level with the remaining 67% from the 318.5 foot level. The temperature of the water at each of these levels was estimated by:

- Estimate the temperature at elevations of 318.5 and 350 ft from each temperature profile for a year using linear interpolation.
- Estimate temperature at each day between the temperature profiles at the two elevations, again using linear interpolation.
- Using these daily temperatures and the average daily diversion increase compute the total monthly volume of diversion of water less than 60 ºF assuming the full diversion was made at each level.
- Compute the final monthly volume diverted as 33% of the volume computed at 350 ft and 67% of the volume computed at 318.5 ft.
- Repeat for each year 2002 – 2006

Figure 4 and **Figure 5** show the computed Folsom Reservoir water temperature at the 350 and 318.5 ft elevation for years 2002 to 2006 respectively.

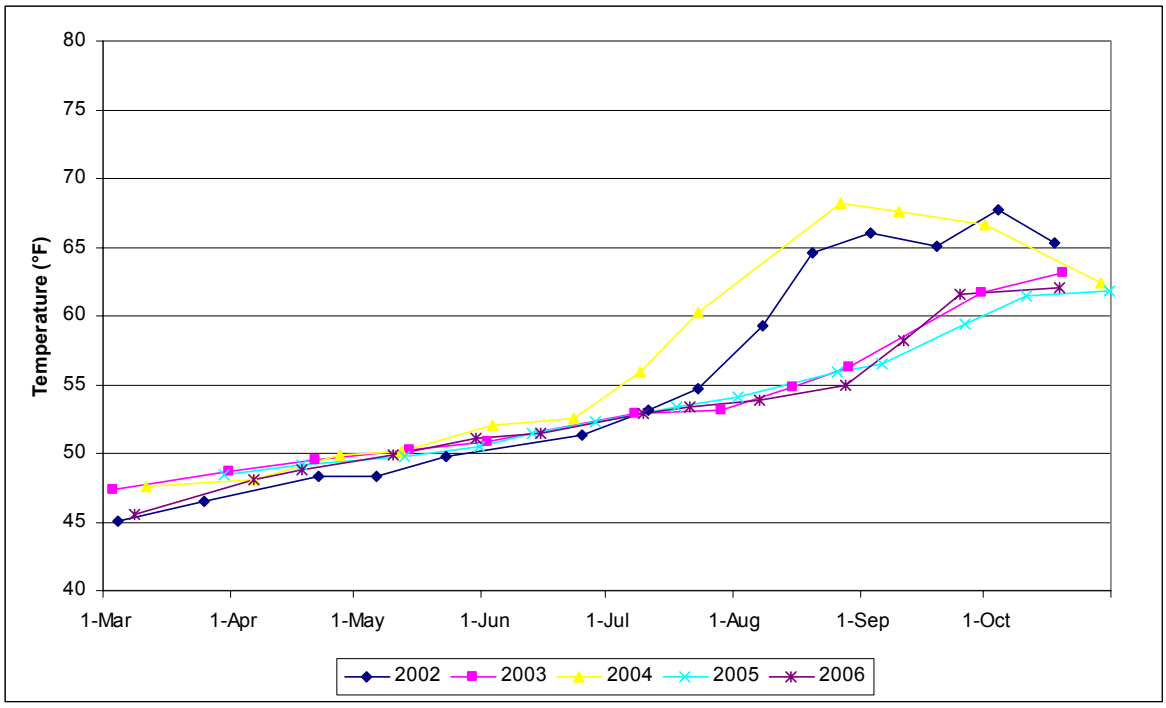

Figure 4. Folsom Reservoir Water Temperature at 350 ft Elevation

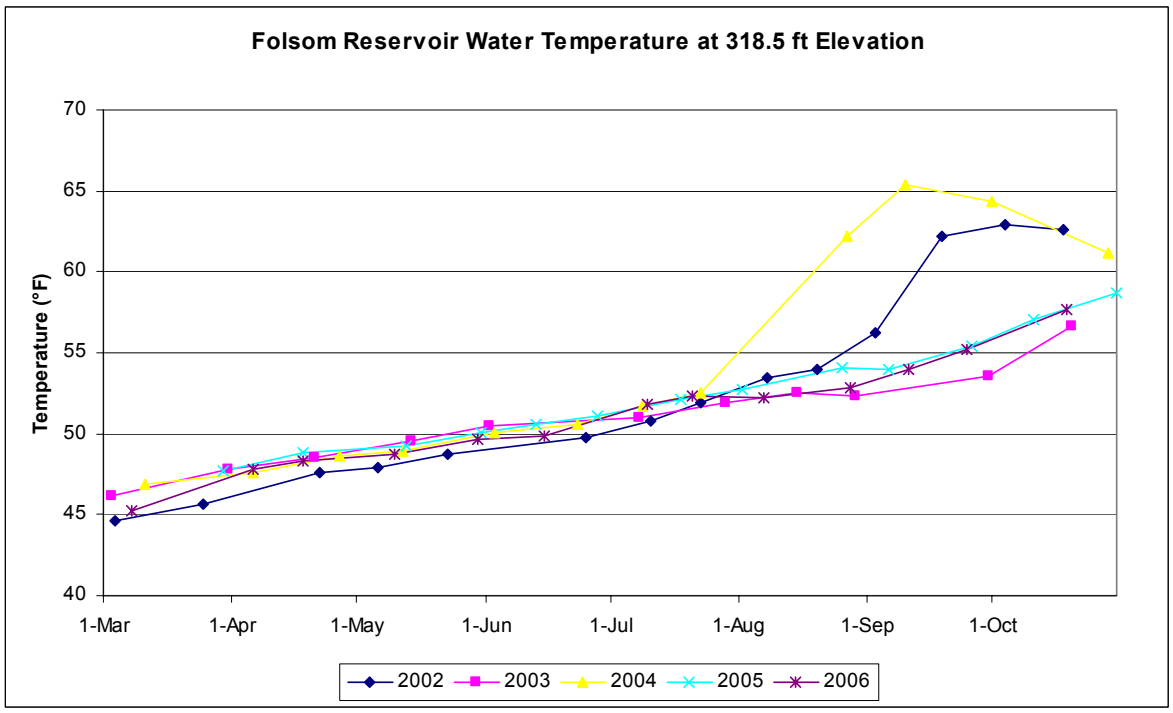

Figure 5. Folsom Reservoir Water Temperature at 318.5 ft Elevation

Table 5 shows the results of this process.

Table 5. Estimated Additional Diversion Below 60° F

	Mar (AF)	Apr (AF)	May (AF)	June (AF)	Jul (AF)	Aug (AF)	Sep (AF)	Total (AF)
2002	0	78	954	1014	1127	558	112	3935
2003	0	78	954	1014	1218	729	343	4336
2004	0	78	954	1014	1088	284	0	3419
2005	0	78	954	1014	1218	729	385	4379
2006	0	78	954	1014	1218	729	334	4328

3.4 Potential Effects to Folsom CWP

As discussed in section 3.2.1 the project will result in increased inflow to Folsom Reservoir, some of which will be below 60 °F and can be assumed to increase the CWP. Also, as discussed in section 3.3 the project will result in increased diversion at the EID water supply intake, some of which will be below 60 °F and can be assumed to decrease the CWP. The potential impact to the Folsom CWP is the net impact of the additional inflow and diversion of water below 60 °F due to the project. This net was calculated by subtracting the increase in the CWP, summarized in Table 4 from the reduction in CWP, summarized in Table 5. The results of this computation are summarized in **Table 6**.

Table 6. Net Change in Folsom Reservoir Cold Water Pool Volume

	Mar (AF)	Apr (AF)	May (AF)	June (AF)	Jul (AF)	Aug (AF)	Sep (AF)	Total (AF)
2002	81	845	-548	-1014	-1218	-558	-112	-2525
2003	81	845	-548	-1014	-1218	-729	-343	-2926
2004	81	845	-548	-1014	-1088	-284	0	-2009
2005	81	845	-548	-1014	-1218	-729	-385	-2969
2006	81	845	-548	-1014	-1218	-729	-334	-2918

These volumes represent the estimated change in the volume of the CWP in Folsom Reservoir due to the project.

The without project CWP volumes as of October 1 each year at or below the 60 °F CWP limit were estimated from the Folsom temperature profiles. The total estimated CWP change from the project was then added to these values to estimate the CWP volumes with the project. **Table 7** summarizes the results of this computation.

Table 7. With and Without Project Folsom CWP Volume on October 1

Year	60 Storage (AF)	Net CWP Change (AF)	60 Storage (AF)
2002	44,770	-2525	42245
2003	124,540	-2926	121,614
2004	26,349	-2009	24,340
2005	145,999	-2969	143,030
2006	125,913	-2918	122,995

3.5 Potential Impacts on Penstock Release Temperatures

The reduction in the CWP volume would be expected to increase the temperature at any given elevation in the reservoir above the original 60 °F elevation. After the water is removed from the reservoir the warmer water from above would be at a lower elevation but would have the same temperature. For this analysis the estimated change in temperature at the centerline of the penstocks was estimated by:

- Assume the full change in the CWP occurred below the centerline of the penstock. This will give the maximum change in temperature at the lowest penstock elevation. (Note that in 2003, 2005,

and 2006 the non project centerline penstock temperature was below the 60 ºF CWP limit. Since the change in CWP volume includes all water less than 60 ºF some portion of the volume would be above the penstock centerline and would not impact the temperature at the centerline. This implies that the temperature change computed in these years is somewhat higher than would actually be expected, giving a conservative estimate of the temperature impact.)

- ❑ Estimate the temperature at the centerline of the penstock elevation (307 ft.) from the reservoir temperature profile.
- ❑ Compute a "modified" storage as the sum of the storage at the centerline of the penstocks plus the net CWP volume removed by the project.
- ❑ Get the "modified" elevation that corresponds to this new storage from the Folsom elevation-storage curve.
- ❑ Estimate the "modified" temperature at the "modified" elevation from the reservoir temperature profile. This represents the temperature of the water that would be at the elevation of the centerline of the penstocks with the project in place.

Table 8 summarizes the results of this process for each year of the analysis.

Table 8. Estimated Temperature Change at Centerline of Penstock

		Original			Modified			
Profile Date	CWP Decrease (AF)	Storage (AF)	Elev (ft)	Temp (ºF)	Storage (AF)	Elev (ft)	Temp (ºF)	Change (ºF)
10/4/2002	2525	50392	307	60.6	52917	308.8	61.2	0.6
9/30/2003	2926	50392	307	53.1	53318	309.1	53.2	0.1
9/30/2004	2009	50392	307	63.9	52401	308.4	64.0	0.1
9/26/2005	2969	50392	307	53.7	53361	309.1	53.9	0.2
9/25/2006	2918	50392	307	53.5	53310	309.1	53.5	0.0

Reclamation has suggested that the number of days or release impacted by any change in the CWP is an appropriate method to evaluate potential impacts to CWP operations. Table 10 summarizes the number of days of release at 1500 CFS represented by each of the computed change in CWP.

Table10. CWP Volume Change and Days Release at 1500 CFS

Year	CWP Decrease (AF)	Equivalent Days
2002	2525	0.8
2003	2926	1.0
2004	2009	0.7
2005	2969	1.0
2006	2918	1.0
Total Additional Diversion	5000	1.7

4.0 Conclusions

The ability to manage the Folsom Reservoir CWP for the benefit of the downstream aquatic resources does not appear to be significantly affected by this project.

In traditional Folsom Reservoir and Lower American River temperature modeling any temperature change of less than 0.3 ºF is assumed to be non-significant as this represents the lower limit of accuracy of temperature measurement. This would imply that in all years except 2002 the estimated change in temperature at the centerline of the penstocks, and therefore the lowest possible release temperature

through the penstocks, due to this project would not be detectable and therefore would not trigger any change in Folsom Reservoir CWP operations.

In 2002 the estimated increase of 0.6 ºF is only slightly above the detectable limit. This small temperature increase by itself might not trigger any change in CWP management or other factors such as penstock release temperature before the increase, heating or cooling in the Lower American River to the temperature target location at Watt Ave, the presence or absence of fish in the river, etc are also included in the decision. Given that the increase occurred in only 1 of 5 years in this analysis, and in only 1 of 2 years with smaller Folsom CWP volumes the chance of this project causing a change in the decision from no river outlet release to making a river outlet release in any specific year appear very small.

Reclamation has suggested that any change in CWP volume equivalent to 4 days release at 1500 CFS could be a significant impact (email comments from Jeff Sandberg of Reclamation 8/28/2007). As shown in Table 10 the equivalent number of days release varies from 0.7 to 1.0. Even if the full additional diversion of 4888 af reduced the CWP this would represent only 1.7 days release, far below the 4 days suggested to have the potential for a significant impact.

The potential project impacts in the future could be different if changes in American River demands or operations (Flow Management Study, Folsom Re-Operation) change and cause a decrease in the Folsom CWP. The likely hood of this happening is relatively small as any changes in Folsom diversions or operations will include consideration to minimize temperature impacts. In any case the maximum volume of 4888 at reduction in CWP and equivalent days release of 1.7 days would remain the same as in the existing condition.