Final Environmental Impact Report for the

Browns Valley Irrigation District Temporary Water Transfers Project

State Clearinghouse Number 2009072040

LEAD AGENCY:

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December 2009

EDAW | AECOM

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TABLE OF CONTENTS

TABLE OF CONTENTS

Section **Page**

Appendices

Exhibits

Tables

ACRONYMS AND ABBREVIATIONS

af	acre-feet
afy	acre-feet per year
AN	above-normal
Basin Plan	Water Quality Control Plan for the Sacramento–San Joaquin River Basins
BN	below-normal
BO	biological opinion
BVID	Browns Valley Irrigation District
CALFED	CALFED Bay-Delta Program
CDEC ID GRL	California Data Exchange Center station identification—Feather River near Gridley
Central Valley RWQCB	Central Valley Regional Water Quality Control Board
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
COA	Coordinated Operations Agreement
Conservation Water	Water under Browns Valley Irrigation District's pre-1914 water right conserved by the Upper Main Water Conservation Project
County	Yuba County
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
D	dry
D-	Decision
Delta	Sacramento–San Joaquin Delta
DFG	California Department of Fish and Game
DWR	California Department of Water Resources
EFH	essential fish habitat
EIR	environmental impact report
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
EWA	Environmental Water Account
FEMA	Federal Emergency Management Agency
maf	million acre-feet
msl	mean sea level
MUN	Municipal and Domestic Supply
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service

NOP	notice of preparation
NWP	nationwide permit
OMR	Old and Middle Rivers
OSCG	Open Space and Conservation Goals
OSCO	Open Space and Conservation Objectives
OSCP	Open Space and Conservation Policies
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
RD-	Revised Decision
Reclamation	U.S. Bureau of Reclamation
RWQCB	Regional Water Quality Control Board
SRFCP	Sacramento River Flood Control Project
SVSP	*Spring Valley Specific Plan*
SWP	State Water Project
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WPA	Watershed Protection Act
YCWA	Yuba County Water Agency

EXECUTIVE SUMMARY

PROJECT OBJECTIVES

The primary purpose of the proposed project is to maximize the utility to the Brown's Valley Irrigation District (BVID) and other water users of water conserved under BVID's pre-1914 water right (Conservation Water). The Conservation Water is available for transfer because BVID implemented the Upper Main Water Conservation Project, which made available 3,100 acre-feet per year (afy) for BVID to transfer. The project objectives are to transfer a maximum of 3,100 afy of Conservation Water during 2010 through 2025: (1) when willing buyers are available; (2) consistent with all applicable constraints on the Central Valley Project (CVP) and State Water Project (SWP) pumping and conveyance systems; and (3) pumping capacity is available at the CVP and SWP pumps in the South Delta.

PROJECT STUDY AREA

The project study area includes BVID, the North Yuba River from New Bullards Bar Reservoir to Englebright Dam, the lower Yuba River and portions of the Feather and Sacramento Rivers between Englebright Reservoir and the Sacramento–San Joaquin River Delta (Delta), the Delta, and south-of-Delta export service areas of the CVP and SWP.

PROPOSED PROJECT

BVID is proposing a multiyear series of short-term (1-year) temporary water transfers to DWR, Reclamation, or south-of-Delta contractors of the CVP or SWP. BVID would transfer up to 3,100 afy of Conservation Water under its pre-1914 water right during the period 2010–2025. Through agreements between BVID as a willing seller and willing buyers under California law, the proposed series of temporary water transfers would maximize the utility of the Conservation Water to BVID and other water users. Each year, BVID intends to identify willing buyers (DWR, Reclamation, or CVP or SWP contractors) downstream of its water service territory that could take delivery of the Conservation Water. BVID would execute one or more transfer agreements each year with such willing buyers. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

The water transfers would occur over a period of 2–6 weeks between July 1 and October 31 of each year. To accommodate the schedule for making the water available to the buyer, the Conservation Water would be temporarily stored by Yuba County Water Agency (YCWA) in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season. The Conservation Water then would be released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Lower Yuba River Accord. The Conservation Water would be released at a rate of approximately 100 cfs, and would flow through Englebright Reservoir and down the lower Yuba, Feather, and Sacramento Rivers, in excess of existing minimum flow requirements, to the Delta.

Depending on conditions in the Delta, a portion of the Conservation Water may be used to meet water quality requirements in the Delta. The remaining water would be exported from the Delta at the SWP or CVP export pumps, conveyed through associated delivery facilities, and then delivered to the buyer of the water. DWR's and Reclamation's pumping of the Conservation Water would be subject to all applicable laws, regulations, decisions, agreements, biological opinions (BOs), and court orders in effect at the time the water would be transferred.

SCOPE AND CONTENT

The discussion of potential effects on the environment in this environmental impact report (EIR) is focused on those impacts that BVID determined, through completion of an Environmental Checklist Form, may be potentially significant under the California Environmental Quality Act (CEQA) and the State CEQA Guidelines (Section 15064). The evaluation of environmental effects in this EIR focuses on the potential for the proposed project to have a significant effect on biological resources, hydrology, and water quality. BVID determined that the proposed project would not have the potential to result in significant impacts on all other resources. Relevant information from the environmental impact report/environmental impact statement (EIR/EIS) for the Lower Yuba River Accord (DWR, YCWA, and Reclamation 2007), which was certified by the YCWA Board of Directors in October 2007 and includes a similar project area to the proposed project, is incorporated by reference (see Section 1.5, "Documents Incorporated by Reference," in Chapter 1 of this EIR).

SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The analysis in this Final EIR determined that the proposed project would result in less-than-significant impacts on hydrology, water quality, and biological resources. The analysis of impacts on these resources areas is summarized below.

HYDROLOGY

The hydrological analysis determined that flood control and flooding along the Yuba, Feather, and Sacramento Rivers under the proposed project would not change or be modified, and changes in the pattern of reservoir operations and river flows as a result of the proposed transfers would be similar to existing conditions. Effects on groundwater and BVID water supplies would be less than significant because the Conservation Water would not be transferred unless sufficient water was available from the Yuba River to meet BVID's water supply demands and would not involve groundwater substitution.

Effects on Delta inflow, Delta outflow, and south-Delta water levels would be less than significant because water would be transferred only when the Delta is in balanced conditions, and flows in the Delta would be within historical averages and similar to existing conditions. Effects on Delta exports and export service areas would be less than significant because an annual transfer of up to 3,100 afy would constitute only an very small fraction of total annual water use within the service area of most potential buyers, and the Conservation Water would be used to offset a shortage in a buyer's existing supplies due to drought, regulatory constraints, or other reasons. Because of the temporary and interruptible nature of the transfers under the proposed project, transferred Conservation Water would not be used to support growth or to expand water service in transferees' service territories.

WATER QUALITY

Effects on surface water quality and other instream beneficial uses in the Yuba, Feather, and Sacramento River systems and the Delta would be less than significant because changes in reservoir operations and river flows would be very small and would not result in measurable changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in affected reservoirs, rivers, or downstream in the Delta. The small flow changes, which are similar to existing conditions and within historical ranges, would not cause unreasonable or significant effects on any other instream beneficial uses.

BIOLOGICAL RESOURCES

Effects on special-status fish and aquatic habitats would be less than significant because annual short-term releases of Conservation Water would not result in significant changes to aquatic habitats or the native fish community, including special-status fish species, in the study area.

Effects on special-status plant and wildlife species would be less than significant because the temporary changes in storage and releases from New Bullards Bar Reservoir and flows in downstream rivers would be extremely small and are not expected to measurably affect riparian and wetland communities along the edges of reservoirs, banks of the rivers, or adjacent upland communities that may provide habitat for special-status species.

Effects on federally protected wetland or DFG-regulated riparian habitat associated with changes in reservoir storage and releases and downstream river flows would be less than significant because the changes in reservoir storage and releases would be temporary, very small, and would remain within the range of variability that currently exists. As a result, the effects of the proposed project on wetland and riparian habitat would not be discernable.

The proposed project would not result in inconsistencies or conflict with conservation goals or strategies in any habitat conservation plans, natural communities conservation plans or any other plans in place or under development to protect biological resources in the region because: (1) changes in storage and flow would be similar to existing conditions, within historical ranges for both storage and flows, and very small relative to the overall water volumes in the affected water bodies; (2) there are no approved habitat conservation plans, natural communities conservation plans, or other approved local, regional, or state plans applicable to the project; and (3) the regional conservation planning efforts underway in the project region are not applicable to the proposed project nor would they be influenced by the proposed project.

ALTERNATIVES

DESCRIPTION OF ALTERNATIVES

ALTERNATIVE 1: NO PROJECT

Under the No-Project Alternative, BVID would not identify or execute temporary transfer agreements each year with willing buyers that could take delivery of the Conservation Water. If BVID does not use the Conservation Water, it would become uncommitted water that YCWA would control. YCWA could store or release the water on a different schedule depending on YCWA operational needs, Yuba Accord constraints, and other considerations.

ALTERNATIVE 2: BVID YUBA RIVER SERVICE EXPANSION

Alternative 2 is similar to the No-Project Alternative, except that BVID would expand water service to the *Spring Valley Specific Plan* (SVSP) area using the Conservation Water to help satisfy additional demands created by buildout of the SVSP. The SVSP, which is located within BVID's Yuba River service area, was approved by the Yuba County Board of Supervisors in 1992 and is currently being entitled. When completely built out, the SVSP would include approximately 3,500 dwelling units and a 220-acre golf course on 2,500 acres. The estimated water demand for the SVSP project at buildout would be approximately 4,000 afy (Yuba County 1992:20 and 71). Policies in the specific plan require that housing use water conservation features and drought-tolerant landscaping (Yuba County 1991:H-3).

ALTERNATIVE 3: NORTH-OF-DELTA IRRIGATION SEASON TRANSFER

Under Alternative 3, BVID would enter into temporary water supply transfer agreements each year with a transferee whose point of diversion is located between Marysville on the Yuba River and the Sacramento River at Hood. Potential transferees include the Freeport Regional Water Authority (FRWA), Davis-Woodland Water Supply Project Authority (DWWSPA), East Bay Municipal Utility District (EBMUD), or Sacramento County Water Agency (SCWA).

Under this alternative, BVID would provide the 3,100 af of Conservation Water on an irrigation season pattern as it is conserved. The water would flow from the historical point of diversion on the North Yuba River, through the Yuba River, and past Marysville. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

ALTERNATIVE 4: NORTH-OF-DELTA TRANSFER – TWO-WEEK DELIVERY SCHEDULE

Under Alternative 4, BVID would enter into temporary short-term transfer agreements each year with FRWA, EBMUD, DWWSJPA, or SCWA to transfer 3,100 afy of Conservation Water to their respective service areas. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

This alternative assumes that BVID would provide the 3,100 af of Conservation Water over a period of 2 weeks between July 1 and October 31 of each year. The Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season, and released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba Accord. The Conservation Water would flow through Englebright Reservoir and down the lower Yuba River to the transferees' point of diversion.

SUMMARY OF ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

Each of the four project alternatives considered would result in only minor changes, relative to existing conditions, in reservoir storage, reservoir releases, and downstream flow on the Yuba, Feather, and Sacramento Rivers. Those changes would remain within minimum instream flow requirements. Because changes in reservoir operations and river flows would be very small, it is not anticipated that any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the Delta would occur as a result of any of the project alternatives. None of the project alternatives would result in violations of minimum instream flow requirements, alterations of high-flow conditions causing impairment of geomorphic processes or fish passage, or changes in water quality preventing water quality standards from being met or beneficial uses from being supported. Therefore, impacts to hydrology and water quality under each of the four project alternatives would be less than significant.

Also, because the proposed releases of Conservation Water would involve very limited changes in flows, and would cause minimal changes in water levels under each of the project alternatives, changes in aquatic habitats would not be discernible, and no evidence exists that significant impacts would occur on any species reliant on the water bodies that would be affected by any of the project alternatives. Therefore, impacts to biological resources under each of the four project alternatives would be less than significant.

ALTERNATIVES CONSIDERED AND REJECTED FROM FURTHER CONSIDERATION

No other alternatives were considered and rejected during the planning process for this project.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

None of the project alternatives considered would result in creation of significant impacts or significant unavoidable impacts on the environment. This analysis assumes that the project alternative that would result in the least change in hydrologic conditions (reservoir storage, releases, and downstream flow conditions), when compared to existing conditions, would have the least impact on the environment. Therefore, the Proposed Project would be considered the environmentally superior project, because it is the most similar to existing conditions.

ISSUES TO BE RESOLVED AND AREAS OF CONTROVERSY

No outstanding issues or areas of controversy have been identified with respect to the proposed project.

PUBLIC REVIEW PROCESS

On July 9, 2009, BVID issued a notice of preparation (NOP) for this EIR. In addition to the State Clearinghouse's distribution of the NOP to responsible and trustee state agencies, the NOP was distributed to federal, state, regional, and local agencies and interested parties (see NOP Mailing List, Appendix B1), and posted on the BVID website. The NOP was circulated for a period of 30 days. The NOP and the single response received are provided in Appendices B2 and B3.

A public scoping meeting was held on July 30, 2009, from 6 to 7 p.m. at the EDAW/AECOM office located at 2022 J Street in Sacramento, California. Notice of the scoping meeting was provided in the NOP and a separate notice was also distributed in accordance with Section 15082(c) of the State CEQA Guidelines, including mailing to county and city clerks of counties and cities bordering on the county in which the project is located. No members of the public or employees of any responsible or trustee public agency attended the scoping meeting.

A notice of completion for the Draft EIR (DEIR) was filed with the Office Planning and Research State Clearinghouse in accordance with State CEQA Guidelines Section 15085 and a notice of availability of the DEIR was posted in accordance with State CEQA Guidelines Section 15087. The public review period for providing comments on the DEIR closed on December 4, 2009. No comments were received by BVID in-person, or by mail, fax, or email by the close of the comment period, 3:00 p.m. on Friday, December 4, 2009. The DEIR noted that written comments could be hand carried, mailed, faxed, or e-mailed to:

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1 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

The California Environmental Quality Act (CEQA) specifies that a public agency must prepare an environmental impact report (EIR) on any project that it proposes to carry out or approve that may have a significant direct or indirect effect on the environment (California Public Resources Code, Section 21080[d]). In accordance with CEQA and the State CEQA Guidelines, Browns Valley Irrigation District (BVID), as lead agency, is preparing an EIR to evaluate the environmental effects associated with the proposed Temporary Water Transfers Project. The proposed project would involve short-term (1-year) temporary water transfers of up to 3,100 acre-feet per year (afy) of water conserved under BVID's pre-1914 water right (Conservation Water). Transfers would occur during the period 2010–2025. The purpose of this EIR is to inform public agency decision makers and the general public of any significant environmental effects of the proposed project, identify feasible methods of minimizing the significant effects, and describe reasonable alternatives to the project that would reduce the significant effects (State CEQA Guidelines, Section 15121[a]).

1.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

BVID is proposing a multiyear series of short-term (1-year) temporary water transfers to the California Department of Water Resources (DWR), U.S. Bureau of Reclamation (Reclamation), and contractors of the Central Valley Project (CVP) or State Water Project (SWP) south of the Sacramento–San Joaquin Delta (Delta). BVID would transfer up to 3,100 afy of Conservation Water under its pre-1914 water right during the period 2010–2025. The 3,100 afy of water is derived from consumptive-use savings resulting from the water conservation project on BVID's Upper Main Canal as documented in a May 2002 report titled *Analysis of Water Conserved Under the Upper Main Water Conservation Project* (BVID 2002). Through agreements between a willing seller (BVID) and willing buyers under California law, the proposed temporary water transfers would maximize the utility of the Conservation Water to BVID and other water users. BVID intends to identify willing buyers (DWR, Reclamation, and CVP and SWP contractors) downstream of its water service area each year that could take delivery of the Conservation Water. BVID would execute one or more transfer agreements each year with willing buyers. Furthermore, the Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

The water transfers would occur over a period of 2–6 weeks between July 1 and October 31 of each year. Because of the potential post-November 1 export restrictions that might be imposed by the Salmon BO, BVID has determined that the proposed project should be conducted between July 1 and October 31 of each year. To accommodate the schedule for making the water available to the buyer, the Conservation Water would be temporarily stored by Yuba County Water Agency (YCWA) in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season. The Conservation Water would be released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Lower Yuba River Accord (Yuba Accord) (DWR, YCWA, and Reclamation 2007). The Conservation Water would flow through Englebright Reservoir and down the lower Yuba, Feather, and Sacramento Rivers in excess of existing minimum flow requirements to the Delta. Depending on conditions in the Delta, a portion of the Conservation Water may be used to meet water quality requirements in the Delta. The remaining water would be exported from the Delta at the SWP or CVP export pumps, conveyed through associated delivery facilities, and then delivered to the buyer of the water.

1.3 SCOPE OF THE ENVIRONMENTAL ANALYSIS

Pursuant to CEQA and the State CEQA Guidelines (Section 15064), the discussion of potential effects on the environment in this EIR is focused on those resource areas that BVID has determined may be significantly affected by implementing the proposed project: hydrology, water quality, and biological resources. An Environmental Checklist Form was completed to make an initial determination of potentially significant effects of the project and effects that would be less than significant or of no impact, and thereby focus the EIR discussion (See Environmental Checklist, Appendix A). BVID determined that the proposed project would not have the potential to result in significant impacts on all other resources; therefore, the environmental factors below are not addressed further in this EIR.

- Aesthetics
- Agricultural Resources
- Air Quality
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services and Utilities
- Recreation
- Transportation and Traffic

1.4 INTENDED USES OF THE EIR AND AGENCY ROLES AND RESPONSIBILITIES

1.4.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 15367 of the State CEQA Guidelines identifies the lead agency as the public agency that is responsible for approving and implementing a project. This EIR will be used by BVID, as lead agency, to fulfill the requirements of CEQA. It will also be used as an informational document by responsible and trustee agencies that could have permitting or approval authority over aspects of the project. A CEQA responsible agency is a state agency, board, or commission or any local or regional agency other than the lead agency that has a legal responsibility for reviewing, carrying out, or approving aspects of a project. Responsible agencies must actively participate in the lead agency's CEQA process and review its CEQA document. This EIR will be used by the responsible agencies for the proposed project (see "Cooperating, Responsible, and Trustee Agencies" below) to ensure that CEQA requirements have been met before the responsible agencies decide whether to approve or permit project elements over which they have authority.

A CEQA trustee agency is a state agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California. The California Department of Fish and Game (DFG) is a trustee agency that has jurisdiction over resources (fish and wildlife) potentially affected by the proposed project.

Federal agencies are not responsible agencies under CEQA; federal agencies are required to comply with the National Environmental Policy Act (NEPA) in making determinations. However, they may use the CEQA document as a basis for their NEPA analyses. The project does not involve any action by Reclamation or any other federal agency at this time, so NEPA compliance is not required. If Reclamation or a CVP contractor seeks to purchase Conservation Water in any given year, a NEPA document may be required at that time.

The agencies that may have responsibility or jurisdiction over the implementation of components of the proposed project are listed below.

LEAD AGENCY

BVID is responsible for providing documentation necessary to satisfy the requirements of CEQA with regard to approval of the proposed project. BVID, acting as the lead agency, has overseen preparation of the draft EIR (DEIR), has been responsible for preparation and certification of the final EIR (FEIR), and has been responsible for its availability to the public and other interested agencies and parties.

RESPONSIBLE AND TRUSTEE AGENCIES

BVID anticipates that state and local agencies that may purchase Conservation Water, as well as DWR in conveying water to SWP contractors would rely on this EIR as responsible agencies. A responsible agency complies with CEQA by considering the EIR prepared by the lead agency and by reaching its own conclusion about whether and how to approve the project involved (State CEQA Guidelines, Section 15096). A "Trustee Agency" is a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California. For example, DFG is a trustee agency for the proposed project.

1.5 DOCUMENTS INCORPORATED BY REFERENCE

Incorporation by reference is encouraged by CEQA (State CEQA Guidelines, Section 15150). CEQA requires a brief citation (below) and summary of the referenced material, as well as the public availability of this material. CEQA also requires citation of the state identification number of the previous EIRs cited (State CEQA Guidelines, Section 15150). Citations, including the state identification number, are provided below, and relevant portions of these documents are summarized throughout this EIR. Printed copies of these documents are available to the public at BVID's office located at 9370 Browns Valley School Road, Browns Valley, California, during normal business hours (7:30 a.m. to 3:30 p.m., Monday through Friday). The following documents are incorporated by reference:

- California Department of Water Resources, Yuba County Water Agency, and U.S. Department of the Interior, Bureau of Reclamation. 2007 (October). *Final Environmental Impact Report/Environmental Impact Statement for the Lower Yuba River Accord*. (State Clearinghouse No. 20050621111.) Sacramento and Marysville, CA. Prepared by HDR | SWRI, Sacramento, CA. (certified by the YCWA Board of Directors in October 2008).

- Browns Valley Irrigation District. 2002 (May). *Analysis of Water Conserved Under the Upper Main Water Conservation Project.* Browns Valley, CA. Prepared by MBK Engineers, Sacramento, CA.

1.6 PUBLIC INVOLVEMENT UNDER CEQA

On July 9, 2009, BVID issued a notice of preparation (NOP) for this EIR. In addition to the State Clearinghouse's distribution of the NOP to responsible and trustee state agencies, copies of the NOP were distributed to federal, state, regional, and local agencies and interested parties (see NOP Mailing List, Appendix B1), and was posted on the BVID Web site. The NOP was circulated for a period of 30 days. The NOP and the single response letter received are provided in Appendix B2 and B3.

A public scoping meeting was held on July 30, 2009, from 6 to 7 p.m. at the EDAW/AECOM office located at 2022 J Street in Sacramento, California. Notice of the scoping meeting was provided in the NOP, and a separate notice was also distributed in accordance with Section 15082(c) of the State CEQA Guidelines, including mailing to county and city clerks of counties and cities bordering on the county in which the project is located. In spite of

extensive noticing provided by BVID, no member of the public or representative of a trustee agency attended the scoping meeting.

A notice of completion for this EIR was filed with the State Clearinghouse of the Governor's Office of Planning and Research in accordance with Section 15085 of the State CEQA Guidelines on October 19, 2009, and a notice of availability of this EIR was posted in accordance with State CEQA Guidelines Section 15087. The public review period for providing comments on the DEIR closed on Friday, December 4, 2009.

1.7 ORGANIZATION OF THIS EIR

This final EIR (FEIR) is organized as follows:

- "Executive Summary" provides an overview of the findings and conclusions of this EIR.
- Chapter 1, "Introduction," provides an overview of the CEQA and EIR review processes, summarizes the proposed project, outlines the scope and intended uses of this document, identifies documents incorporated by reference, and summarizes the public scoping process.
- Chapter 2, "Project Description," describes the purpose of, objectives, and need for the Temporary Water Transfers Project and provides details of the project's features.
- Chapter 3, "Environmental Analysis," evaluates the topics listed above in Section 1.3, "Scope of the Environmental Analysis," and includes a discussion of the regulatory background; environmental setting; less-than-significant, potentially significant, significant, and beneficial environmental impacts; mitigation for potentially significant and significant impacts; and any impacts remaining significant after mitigation.
- Chapter 4, "Cumulative Impacts and Other CEQA-Required Sections," describes the impacts of implementing the proposed project in combination with the impacts of related past, present, and reasonably foreseeable projects; and discusses the growth-inducement potential of the project, known areas of controversy, irreversible and irretrievable commitment of resources, and unresolved issues.
- Chapter 5, "Alternatives," provides a comparative analysis between the proposed project and two action alternatives, lists the significant impacts of the proposed project, evaluates the No-Project Alternative, and identifies the "environmentally superior" alternative.
- Chapter 6, "References," lists the sources of information cited throughout the FEIR.
- Chapter 7, "List of Preparers," lists the individuals who contributed to preparation of the FEIR.
- Appendices provide background and technical information.

2 PROJECT DESCRIPTION

2.1 PROJECT OBJECTIVES

The primary purpose of the proposed project is to maximize the utility to BVID and other water users of water conserved under BVID's pre-1914 water right (Conservation Water). The Conservation Water is available for transfer because BVID implemented the Upper Main Water Conservation Project, which made available 3,100 afy for BVID to transfer. The project objectives are to transfer a maximum of 3,100 afy of Conservation Water annually during 2010 through 2025: (1) when willing buyers are available and (2) consistent with all applicable constraints on the CVP and SWP systems.

2.2 PROJECT STUDY AREA

2.2.1 YUBA RIVER SYSTEM

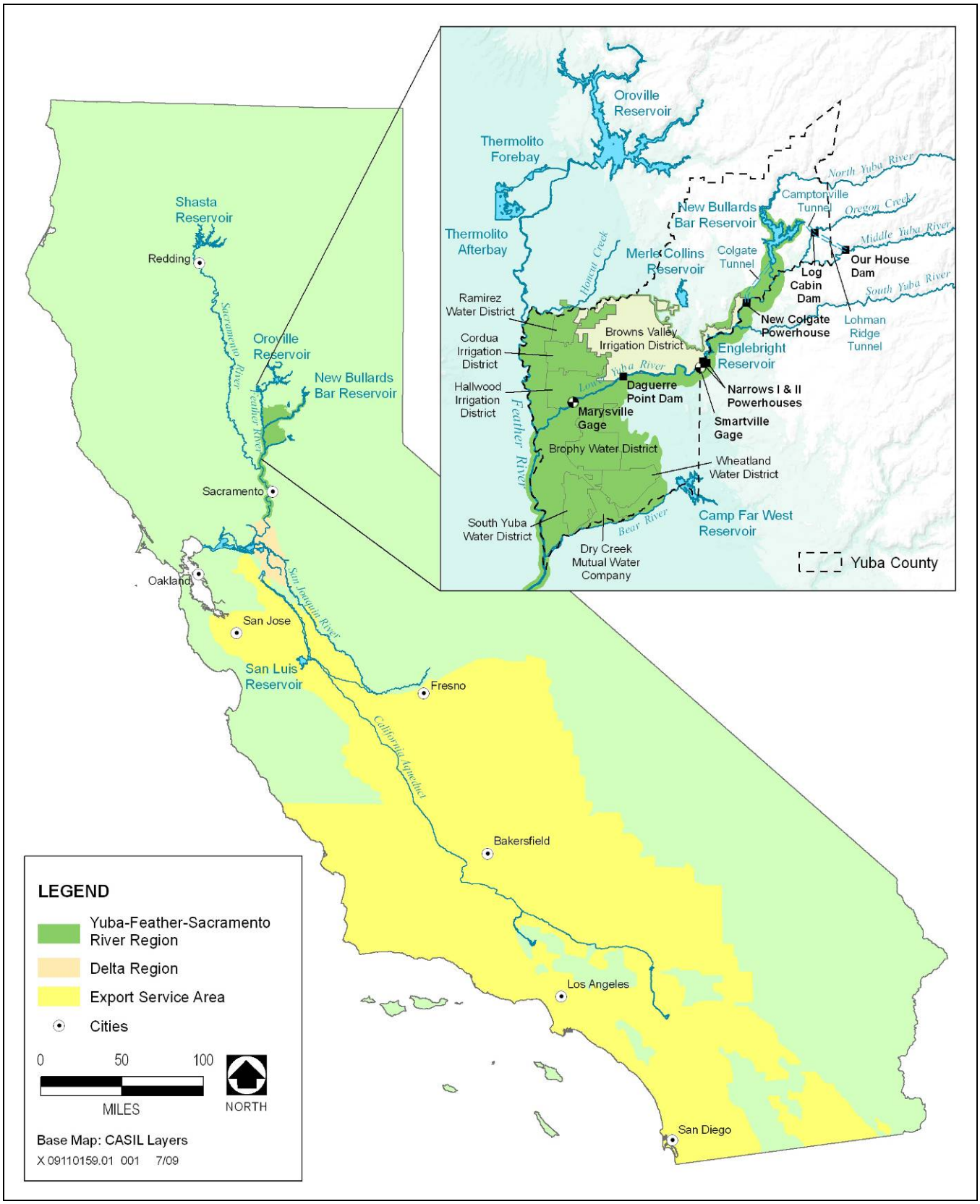
The Yuba River Basin drains approximately 1,339 square miles of the western Sierra Nevada slope, including portions of Yuba, Sierra, Placer, and Nevada Counties (Exhibit 2-1). The Yuba River is a major tributary to the Feather River, historically contributing about 40% of the annual flow in the Feather River. The flow in the Yuba River is partially controlled by New Bullards Bar Reservoir, the largest reservoir in the watershed, which was constructed by YCWA in 1969. This reservoir stores approximately 966,000 acre-feet (af) of water, has a surface area of approximately 4,800 acres when full, and regulates winter and spring drainage from approximately 489 square miles of watershed on the Yuba River. YCWA stores water in New Bullards Bar Reservoir to provide instream flows for fishery enhancement, flood control, power generation, and recreation, and to provide irrigation water to eight member units, including BVID, that have both water rights and/or water service contracts. YCWA has also supplied water from New Bullards Bar Reservoir for municipal, industrial, and fish and wildlife purposes through a number of temporary water transfers lasting less than 1 year, and through longer-term transfers under the Yuba Accord.

Englebright Dam and Reservoir are downstream of New Bullards Bar Reservoir. Transfer water that is released from New Bullards Bar Reservoir into the North Fork Yuba River generally passes through Englebright Reservoir without modifying water surface elevations at Englebright Reservoir. Recent historical flows in the Yuba River below Englebright Dam during July and August have been between approximately 1,700 and 2,200 cfs during wet years and as low as 700 cfs during dry years or when the snowpack's water content is low. Daguerre Point Dam is approximately 12 miles downstream of Englebright Dam. During July and August, flows above Daguerre Point Dam are typically 600–1,100 cfs higher than flows below the dam because of diversions at and above the dam to meet irrigation demands. Specific without-transfer flows in 2009 were similar to average flows because of the average snowpack and water content in this area of the Sierra Nevada (BVID 2009). The Yuba River supplies the majority of surface water within Yuba County.

2.2.2 FEATHER AND SACRAMENTO RIVERS

The Feather River flows south for 65 miles from Oroville Dam and empties into the Sacramento River near Verona. Flows in the Feather River are controlled primarily by DWR's Oroville Dam, which stores 3.5 million af of water. A minimum flow of 600 cfs is maintained in the 5-mile-long, low-flow section of the Feather River between the Fish Barrier Dam and the river outlet from Thermalito Afterbay. A minimum flow of approximately 1,700 cfs is maintained in the 35-mile-long, high-flow section of the Feather River below the Thermalito Afterbay Outlet.

The Sacramento River, which originates in the Cascade and Siskiyou Mountains of northern California and terminates in the Sacramento–San Joaquin Delta (Delta), is the largest river in California. Flows in the Sacramento River are controlled primarily by Reclamation's Shasta Dam.



Source: DWR, YCWA, and Reclamation. 2007, adapted by EDAW in 2009

Project Study Area **Exhibit 2-1**

Release flows from both Oroville and Shasta Dams are coordinated by DWR and Reclamation, respectively, primarily to meet water supply and environmental needs downstream. Table 2-1 identifies average monthly flows in the Sacramento River below Keswick, the Feather River at Gridley, and the Yuba River at Marysville for above-normal (AN), below-normal (BN), and dry (D) water year types.

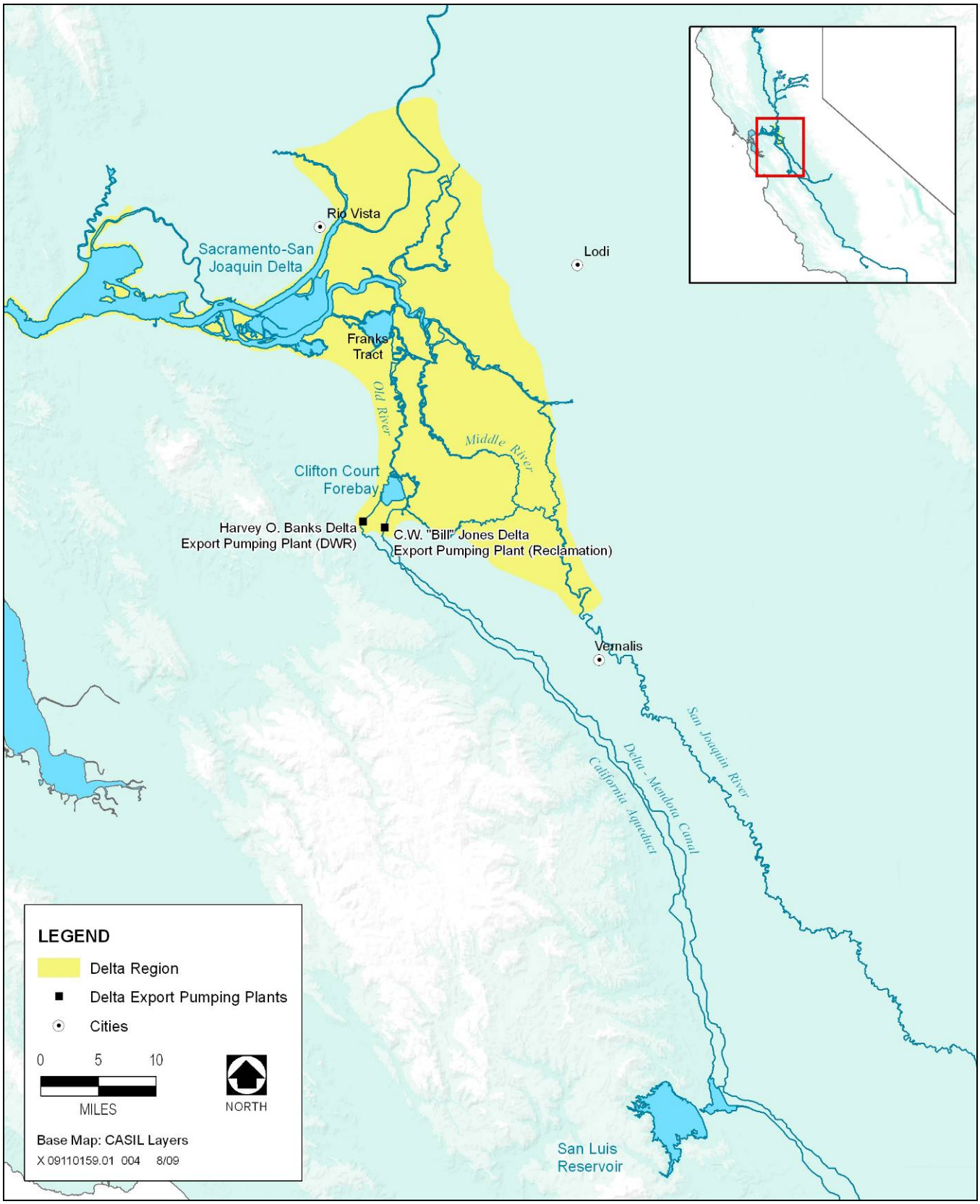
Table 2-1
Average Monthly Flow (cfs) by Year Type

Month	Water Year Type	Sacramento River at Keswick (1969–2007)	Feather River at Gridley (1993–2007)	Yuba River at Marysville (1963–2005)
		USGS Gauge No. 11370500	DWR CDEC Station ID GRL	USGS Gauge No. 11421000
July	AN	12,600	6,200	1,500
	BN	13,900	7,400	550
	D	14,300	4,400	740
August	AN	10,800	5,200	1,600
	BN	10,300	6,300	870
	D	11,800	4,000	840
September	AN	8,000	3,100	1,400
	BN	7,400	3,600	1,000
	D	7,300	3,000	600
October	AN	6,400	2,300	1,300
	BN	5,900	2,500	1,000
	D	5,400	2,000	460
November	AN	8,200	2,100	1,600
	BN	6,300	2,300	1,200
	D	5,400	1,800	870
December	AN	9,500	5,800	1,900
	BN	6,100	2,100	2,100
	D	6,900	1,600	4,500

Notes:
AN = above normal; BN = below normal; CDEC ID GRL = California Data Exchange Center station identification—Feather River near Gridley; cfs = cubic feet per second; D = dry; DWR = California Department of Water Resources; USGS = U.S. Geological Survey
Source: BVID 2009

2.2.3 SACRAMENTO–SAN JOAQUIN DELTA

The Delta, located at the confluence of the Sacramento and San Joaquin Rivers, serves as the major hub for operations of both the SWP and the CVP (Exhibit 2-2). SWP operates the Harvey O. Banks Pumping Plant in the south Delta to lift water into the California Aqueduct for delivery to SWP customers in the San Joaquin Valley and southern California. CVP operates the C. W. “Bill” Jones (i.e., Tracy) Pumping Plant to lift water from the south Delta into the Delta-Mendota Canal to service CVP contractors in the San Joaquin Valley and the Tulare Basin. Current SWP and CVP operations in the Delta are governed by a series of regulations and agreements with the State Water Resources Control Board (SWRCB), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and DFG. These regulations and agreements limit the volume of water that can be exported from the Delta based on Delta hydrodynamics, water quality, and potential impacts on fisheries, as determined by monitoring of fish populations at the pumps.



Source: DWR, YCWA, and Reclamation 2007, adapted by EDAW in 2009

Delta Region **Exhibit 2-2**

Water conditions in the south Delta are influenced to varying degrees by natural tidal fluctuation, San Joaquin River flow and quality, local agricultural drainage water returns, SWP and CVP export pumping, local diversions, operation of the Delta Cross Channel and tidal barrier facilities, channel capacity, and regulatory constraints. These factors affect water levels and availability at some local diversion points. When the SWP and CVP are exporting water, water levels in local channels can be drawn down. Also, flows can diverge and converge in some channels. If local agricultural drainage water is pumped into channels where circulation is poor, such as shallow, stagnant, or dead-end channels, water quality can be affected. The South Delta Temporary Barriers Project, initiated in 1991, has been used to provide short-term improvements of water conditions for the south Delta. The program involves the seasonal installation of four barriers: one in Middle River, two in Old River, and one in the Grant Line Canal. Three of the barriers are designed to improve water levels and circulation for agricultural diversions. These barriers are installed by DWR and Reclamation on a seasonal basis (spring, summer, and/or fall) as needed to improve water levels and water quality (DWR 2009).

Judge Oliver Wanger of the United States District Court has issued orders directing Reclamation and DWR to take certain actions to mitigate impacts on delta smelt, such as to substantially curtail Delta exports by the CVP and SWP from late December through June of each year (*NRDC v. Kempthorne*). DWR's and Reclamation's pumping of the Conservation Water would be subject to all past and future decisions and orders of the SWRCB, biological opinions, and court orders concerning the Delta and operation of the CVP and SWP export facilities.

2.2.4 SOUTH-OF-DELTA CVP/SWP EXPORT SERVICE AREA

The "Export Service Area" is defined as those lands that receive, store, and use CVP and SWP water pumped from the Delta. For the purposes of this EIR, this area includes San Luis Reservoir, and CVP/SWP customers in the San Joaquin Valley, Bay Area, south central California coast, and southern California.

San Luis Reservoir is an offstream storage reservoir within the Export Service Area jointly operated by the CVP and SWP. It is near Los Banos, has a capacity of 2,041,000 af, and stores exports from the Delta to be used when the water is needed in the Export Service Area. Both the CVP and SWP systems use San Luis Reservoir to increase water allocations. Water from San Luis Reservoir supplements other CVP or SWP water during periods of constrained operations in the Delta and when demands exceed maximum capacity at the pumping plants.

2.3 PROJECT HISTORY AND CONTEXT

2.3.1 BROWNS VALLEY IRRIGATION DISTRICT AND THE YUBA REGION

BVID, one of eight YCWA contracting member units, is one of the oldest irrigation districts in California (formed in 1888) and includes approximately 55,000 acres located within Yuba County, east of Marysville. It has three major sources of water:

- a pre-1914 direct diversion water right for 47.2 cfs from the North Fork Yuba River, which is the most senior right on the river;
- post-1914 appropriative water-right licenses for direct diversion from Dry Creek and storage in Merle Collins Reservoir, a storage facility operated by BVID on Dry Creek, which is a tributary to the Yuba River; and
- a water supply contract with YCWA for up to 9,500 afy.

Between 1964 and 1990, BVID diverted its Yuba River pre-1914 right in part at the head of BVID's Upper Main Canal, which consists of about 20 miles of ditches and flumes. The balance of the pre-1914 right has been diverted from the Yuba River, below Dry Creek, at BVID's Pumpline Canal diversion.

UPPER MAIN WATER CONSERVATION PROJECT

In 1990, BVID began a project (referred to in this EIR as "the water conservation project") to construct a pipeline to deliver water from Collins Lake to serve the area that was being served from the Upper Main Canal. In connection with the water conservation project, BVID terminated deliveries from its Upper Main Canal in 1990 because the canal was difficult to maintain and experienced high seepage losses. The consumptive-use savings resulting from the water conservation project were quantified as 3,100 afy in a May 2002 report titled *Analysis of Water Conserved Under the Upper Main Water Conservation Project* (BVID 2002). Resolution No. 3-7-90-1 approving the water conservation project (Appendix G in above-referenced report [BVID 2002]) states BVID's intention to sell or use the Conservation Water within or outside of its boundaries in accordance with Sections 1011 and 1706 of the California Water Code to help pay the cost of the water conservation project. This factor was an essential element in the economic feasibility of the water conservation project. BVID may transfer water made available as a result of the water conservation project under Water Code Sections 1011 and 1706.

BVID WATER TRANSFER HISTORY

BVID has completed several temporary transfers of the Conservation Water since 1990 as follows:

- in 1990, to DFG's Gray Lodge Wildlife Area;
- in 1991 and 1992, to DWR's State Water Bank;
- in 1993–1996, to the Sutter Bypass–Butte Slough Water Users Association;
- in 1997, to Reclamation as part of a YCWA transfer; and
- in 2003, 2004, 2007, 2008, and 2009 to the Santa Clara Valley Water District.

2.3.2 YUBA RIVER DEVELOPMENT PROJECT AND THE LOWER YUBA RIVER ACCORD

The Yuba River Development Project is a multipurpose project constructed by YCWA for flood control, water supply, and hydroelectric generation purposes on the lower Yuba River. The Yuba Accord was adopted to resolve instream flow issues associated with operation of the Yuba River Development Project in a way that protects and enhances lower Yuba River fisheries and local water supply reliability. BVID is among 17 signatories (federal, state, and local agencies, and nongovernmental organizations) to the Yuba Accord.

The Yuba Accord facilitates resolution of the challenges created by competing interests in the lower Yuba River by providing water for fisheries, developing new tools to ensure reliable local water supplies, crafting a revenue stream to pay for Yuba Accord programs, and providing additional water for out-of-county environmental and consumptive uses. These various objectives are met through implementation of the Yuba Accord, which includes the *Principles of Agreement for Proposed Lower Yuba River Fisheries Agreement* (Fisheries Agreement), the *Principles of Agreement for Proposed Conjunctive Use Agreements* (Conjunctive Use Agreements), and the *Principles of Agreement for Proposed Long-Term Transfer Agreement* (Water Purchase Agreement). These agreements are briefly discussed below.

FISHERIES AGREEMENT

The Fisheries Agreement was developed by state, federal, and consulting fisheries biologists, fisheries advocates, and policy representatives. Compared to the interim flow requirements imposed by the SWRCB Revised Decision 1644 (RD-1644) (SWRCB 2003), the Fisheries Agreement established higher instream flow requirements in the lower Yuba River below Englebright Dam in most months of most water years.

CONJUNCTIVE USE AGREEMENTS

To assure that YCWA's water supply reliability would not be reduced by the higher instream flow requirements provided in the Yuba Accord, YCWA and its participating member units have executed and are implementing

Conjunctive Use Agreements. These agreements establish a comprehensive conjunctive-use program that integrates the surface-water and groundwater supplies of the local irrigation districts and mutual water companies served by YCWA in Yuba County. Integration of surface water and groundwater allows YCWA to increase the efficiency of its water management and ensure sufficient water supply reliability for all member units.

WATER PURCHASE AGREEMENT

Under the Water Purchase Agreement (Tier 1 Agreement), Reclamation and DWR have entered into an agreement with YCWA to purchase water from YCWA for use in the Environmental Water Account or an equivalent program. Additional water purchased by Reclamation and DWR is available for the CVP and SWP in drier years. The Environmental Water Account or an equivalent program takes delivery of water in every year when operational and hydrological conditions allow; the CVP and SWP receive additional water in the drier years.

2.4 PROPOSED PROJECT

BVID is proposing a multiyear series of short-term (1-year) temporary water transfers to DWR, Reclamation, or south-of-Delta contractors of the CVP or SWP. BVID would transfer up to 3,100 afy of Conservation Water under its pre-1914 water right during the period 2010–2025. Through agreements between BVID as a willing seller and willing buyers under California law, the proposed series of temporary water transfers would maximize the utility of the Conservation Water to BVID and other water users. Each year, BVID intends to identify willing buyers (DWR, Reclamation, or CVP or SWP contractors) downstream of its water service territory that could take delivery of the Conservation Water. BVID would execute one or more transfer agreements each year with such willing buyers. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

The water transfers would occur over a period of 2–6 weeks between July 1 and October 31 of each year. To accommodate the schedule for making the water available to the buyer, the Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season. The Conservation Water then would be released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba River Accord. The Conservation Water would be released at a rate of approximately 100 cfs, and would flow through Englebright Reservoir and down the lower Yuba, Feather, and Sacramento Rivers, in excess of existing minimum flow requirements, to the Delta.

Depending on conditions in the Delta, a portion of the Conservation Water may be used to meet water quality requirements in the Delta. The remaining water would be exported from the Delta at the SWP or CVP export pumps, conveyed through associated delivery facilities, and then delivered to the buyer of the water. DWR's and Reclamation's pumping of the Conservation Water would be subject to all of the following:

- all past and future applicable SWRCB decisions and orders;
- any applicable court orders; and
- all applicable biological opinions covering CVP and SWP operations, including USFWS's December 15, 2008, biological opinion for delta smelt and NMFS's June 4, 2009, biological opinion for Sacramento River winter-run Chinook salmon, Sacramento River spring-run Chinook salmon, Central Valley steelhead, North American green sturgeon, and southern resident killer whales, to the extent these opinions apply given pending court challenges against them.

It is expected that the Conservation Water would be pumped primarily if not exclusively by DWR's Delta export facilities. If Reclamation's facilities are used to pump water during any transfer year, then NEPA compliance may be necessary and would be prepared separately as needed. While it is BVID's intent to transfer Conservation

Water to DWR, Reclamation, or south-of-Delta CVP or SWP contractors, as covered in this project description, it is possible that BVID might transfer Conservation Water to other willing buyers that do not rely on the CVP or SWP facilities. If necessary, BVID would complete supplemental or separate CEQA reviews for any transfers to buyers not covered by this EIR.

Depending on the buyer of the Conservation Water, the water could be used anywhere within the SWP and CVP service areas and could be used for municipal and industrial, agricultural, power generation, recreation, or environmental needs. Because water shortage situations tend to impact urban areas the most, the water is most likely to be purchased and used by urban water agencies for municipal and industrial uses within their service territories. For example, BVID's last five transfers have been to Santa Clara Valley Water District, which is the wholesale agency in the Silicon Valley area. A list of SWP and CVP contractors that would be potential purchasers of BVID transfer water is presented in Table 2-2.

Table 2-2
South-of-Delta SWP and CVP Water Contractors

California State Water Project
Municipal and Industrial Contractors
Alameda County FC&WCD Zone 7
Alameda County Water District
Antelope Valley-East Kern Water Agency
Castaic Lake Water Agency
Coachella Valley Water District
Crestline-Lake Arrowhead Water Agency
Desert Water Agency
Kern County Water Agency
Littlerock Creek Irrigation District
Metropolitan Water District of Southern California
Mojave Water Agency
Palmdale Water District
San Bernardino Valley Municipal Water District
San Gabriel Valley Municipal Water District
San Gorgonio Pass Water Agency
San Luis Obispo County Flood Control and Water Conservation District
Santa Barbara County Flood Control and Water Conservation District
Santa Clara Valley Water District
State Water Contractors (Corporation)
Ventura County Watershed Protection District
Agricultural Contractors
Castaic Lake Water Agency
County of Kings
Dudley Ridge Water District
Empire-West Side Irrigation District
Kern County Water Agency

Table 2-2 South-of-Delta SWP and CVP Water Contractors
Oak Flat Water District
State Water Contractors (Corporation)
Tulare Lake Basin Water Storage District
Central Valley Water Project
Municipal and Industrial Contractors
City of Avenal
City of Coalinga
City of Fresno
City of Huron
City of Lindsay
City of Orange Cove
City of Tracy
Fresno County Water Works District No. 18
San Benito County Water District
Santa Clara Valley Water District
Agricultural Contractors
Arvin-Edison Water Storage District
Banta Carbona Irrigation District
Broadview Water District
Byron-Bethany Irrigation District
Coelho Family Trust
Del Puerto Water District
Delano-Earlimart Irrigation District
Eagle Field Water District
Exeter Irrigation District
Fresno Irrigation District
Fresno Slough Water District
Garfield Water District
Grasslands Water District
International Water District
Ivanhoe Irrigation District
James Irrigation District
Laguna Water District
Lewis Creek Water District
Lindmore Irrigation District
Lindsay-Strathmore Irrigation District
Lower Tule River Irrigation District
M. L. Dudley Company

Table 2-2 South-of-Delta SWP and CVP Water Contractors
Central Valley Water Project – Continued
Agricultural Contractors – Continued
Mercy Springs Water District
Orange Cove Irrigation District
Oro Loma Water District
Panoche Water District
Patterson Water District
Porterville Irrigation District
Reclamation District 1606
San Benito County Water District
San Luis Water District
Santa Clara Valley Water District
Saucelito Irrigation District
Shafter-Wasco Irrigation District
Southern San Joaquin Municipal Utilities District
Stone Corral Irrigation District
Tea Pot Dome Water District
Terra Bella Irrigation District
Tranquility Irrigation District
Tranquility Public Utility District
Tulare Irrigation District
West Stanislaus Water District
Westlands Water District
Wildlife Refuge Contractors
China Island Unit
East Bear Creek Unit
Freitas Unit
Kesterson National Wildlife Refuge
Los Banos Wildlife Management Area
Mendota Wildlife Management Area
Salt Slough Unit
San Luis National Wildlife Refuge
Volta Wildlife Management Area
West Bear Creek Unit

2.5 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

2.5.1 FEDERAL AND STATE LAWS AND REGULATIONS GOVERNING WATER TRANSFERS AND WATER ACQUISITIONS

Both federal and state laws contain provisions that authorize, acknowledge, or support water transfers. This section describes the water rights and statutes governing water transfers that are applicable to the proposed BVID Temporary Water Transfers Project.

WATER RIGHTS

Riparian Rights

A property owner with lands abutting a stream, lake, or defined underground channel has a right to divert and use the water adjacent to or flowing by that land. These rights are known as "riparian rights." Riparian rights extend only to the natural flow of the stream and allow riparian landowners to divert as much water as they can reasonably and beneficially use on riparian lands in the watershed of the stream. During times of water shortage, riparian right holders are obligated to share the natural flow of the stream equally with other riparian right holders. These rights do not authorize storage of water during times of water surplus for use in times of water shortage (DWR, YCWA, and Reclamation 2007:1-14). BVID does not claim any riparian water rights.

Appropriative Rights

Appropriative water rights are based on beneficial use and allow a stream's flow to be diverted for use on land that does not directly abut the waterway. Appropriative rights may be used both to store water and to directly apply water to beneficial use. Unlike riparian right holders, who share equally in the natural flow of the system, priorities among appropriative right holders are based on the "first in time, first in right" doctrine. During periods of low flows in a waterway, senior water right holders have priority, and junior water right holders must reduce or cease water diversions, if necessary.

Appropriative rights are divided into two categories: pre-1914 and post-1914 (or modern) appropriative rights, demarking the time when the state began to regulate appropriations of water. Pre-1914 appropriative rights are not under any statewide permitting authority, and right holders need not give notice or request permission to change the purpose of use, place of use, or points of diversion. However, if such a change could be construed as initiating a new right, a new appropriative right would be required for the diversion and use of the water. Such changes also must not injure any legal users of water (see the discussion of California Water Code Section 1706 below). In contrast, modern appropriative rights are subject to administrative requirements that involve water right permits and licenses. Water users obtain modern appropriative water right permits by applying to the SWRCB. Any requests to change modern appropriative rights must go through a public notification and petition and approval process (DWR, YCWA, and Reclamation 2007:1-14). BVID possesses both pre-1914 and post-1914 appropriative water rights.

WATER TRANSFERS

BVID relies on provisions in the California Water Code as authority for the right to transfer the 3,100 afy portion of the Conservation Water that would have been consumptively used in the absence of the BVID water conservation project (BVID 2002). Section 1011 of the Water Code states, in part:

> (a) When any person entitled to the use of water under an appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of the appropriated water shall be deemed the equivalent to a reasonable beneficial use of water to the extent of the cessation or reduction in use. No forfeiture of the appropriative right to the water conserved

> shall occur upon the lapse of the forfeiture period applicable to water appropriated pursuant to the Water Commission Act or this code or the forfeiture period applicable to water appropriated prior to December 19, 1914.

Section 1706 of the Water Code states:

> The person entitled to the use of water by virtue of an appropriation other than under the Water Commission Act or this code may change the point of diversion, place of use, or purpose of use if others are not injured by such change, and may extend the ditch, flume, pipe, or aqueduct by which the diversion is made to places beyond that where the first use was made.

Several sections of the California Water Code contain declarations of state policy that favor voluntary water transfers. For example, Section 109 declares state policy favoring voluntary water transfers and directs DWR, the SWRCB, and all other state agencies to encourage such transfers. Section 475 contains legislative findings and declarations favoring voluntary water transfers, states that the coordinated assistance of state agencies is required for such transfers, and directs DWR to establish an ongoing program to facilitate voluntary water transfers.

Several statutory provisions declare that the act of transferring water shall not, by itself, result in a forfeiture of the underlying water right. For example, Section 1244 of the Water Code states that a water transfer, in itself, shall not constitute evidence of waste or unreasonable use, and shall not affect any determination of forfeiture of an appropriative right. Water Code Section 1745.07 states that no transfer of water pursuant to any provision of law shall cause a forfeiture, diminution, or impairment of any water right, and that a transfer approved under any provision of law is deemed to be a beneficial use of water by the transferor. (See also Sections 1010, 1011, 1011.5, 1014–1017, 1731, and 1737 of the California Water Code.)

Under Section 1011 of the Water Code, the right to the use of water under an appropriative right that has been reduced as a result of water conservation efforts may be transferred pursuant to any provision of law relating to the transfer of water. For purposes of Section 1011, "water conservation" means using less water to accomplish the same purpose of use allowed under an existing appropriative water right. To be able to transfer the water right as specified under Section 1011, the water right holder must file periodic reports with the SWRCB to describe the extent and amount of the reduction in water use caused by the holder's water conservation efforts. BVID has documented conserved water with the SWRCB in several letters and reports since implementing the Upper Main Water Conservation Project in 1990, most recently in a Conservation and Conjunctive Use Report dated March 16, 2009 that summarizes conserved water each year from 1990 through 2008.

2.5.2 OTHER PERMITS AND APPROVALS

This EIR will serve as a critical component of BVID's documentation necessary to satisfy the requirements of CEQA with regard to approval of the proposed project. BVID, acting as the lead agency, will oversee preparation and certification of the EIR and will be responsible for its availability to the public and other interested agencies and parties. BVID anticipates that state and local agencies that may purchase Conservation Water, as well as DWR in conveying the Conservation Water to SWP contractors, will rely on BVID's EIR.

The project does not involve any action by Reclamation or any other federal agency at this time, so no NEPA document is required. If Reclamation or a CVP contractor purchases Conservation Water in any given year, a NEPA document may be required at that time.

Because the proposed project involves a pre-1914 water right, BVID may change the Conservation Water's point of diversion, place of use, and purpose of use under Water Code Section 1706 without any regulatory approvals, as long as such change does not injure any legal user of water.

3 ENVIRONMENTAL IMPACT ANALYSIS

3.0 APPROACH TO THE ENVIRONMENTAL ANALYSIS

This chapter describes the general approach to the environmental analysis, relevant setting information, and the results of the analysis of direct and indirect significant environmental impacts of the proposed project. Cumulative impacts, growth-inducing effects, and other CEQA-required sections are discussed in Chapter 4.

In accordance with Section 15126.2 of the State CEQA Guidelines, this EIR identifies and focuses on the significant direct and indirect environmental effects of the proposed project. Sections 3.1, "Hydrology and Water Quality," and 3.2, "Biological Resources," describe the regulatory and environmental setting, significance criteria, and impacts and mitigation measures. As described in Section 1.3, "Scope of the Environmental Analysis," and in Appendix A, "Environmental Checklist," all other resource topics have been eliminated from detailed consideration because there is no possibility for significant effects on these resources from implementing the proposed project.

Sections 3.1 and 3.2 are presented in the following general format:

"Regulatory Setting" identifies the plans, policies, laws, and regulations that are relevant to each topic.

"Environmental Setting" provides, in accordance with State CEQA Guidelines Section 15125, an overview of the existing physical conditions in the project area at the time the notice of preparation was published and that could be affected by implementation of the proposed project.

"Environmental Impacts and Mitigation Measures" lists the significance criteria used in the impact analysis and identifies the direct and indirect impacts of the proposed project on the environment, in accordance with State CEQA Guidelines Sections 15126, 15126.2, and 15143. The significance criteria (sometimes called "thresholds of significance") used in this EIR are based on the checklist presented in Appendix G of the State CEQA Guidelines; best available data; and regulatory standards of federal, state, and local agencies. The level of each impact is determined by comparing the effects of the proposed project to the environmental setting.

The EIR must describe any feasible mitigation measures that could avoid, minimize, rectify, reduce, or compensate for significant adverse impacts. The mitigation measures must be fully enforceable through incorporation into the project (Public Resources Code Section 21081.6[b]). Mitigation measures are not required for impacts that are found to be less than significant. The proposed project analyzed in this EIR involves a series of temporary water transfers that would be similar to past temporary water transfers by BVID. The proposed transfers would occur only in years when sufficient supplies are available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water. The increased river flows resulting from the project would be minimal and within the range of historic flows. In addition, the proposed project does not involve any ground-disturbing activities. Therefore, as shown in Sections 3.1 and 3.2 of this EIR, no significant or potentially significant impacts of the proposed project have been identified in the environmental analysis. As a result, no mitigation measures are provided.

3.1 HYDROLOGY AND WATER QUALITY

3.1.1 REGULATORY SETTING

Numerous plans, policies, regulations, and laws could apply to the implementation of the proposed project and its potential effects on hydrology and water quality. The proposed project would be implemented in compliance with all of the relevant portions of each plan, policy, regulation, and law presented below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Clean Water Act

The Clean Water Act (CWA) is the major federal legislation governing the water quality aspects of the proposed project. The objective of the act is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA establishes the basic structure for regulating discharge of pollutants into the waters of the United States and gives the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs, such as setting wastewater standards for industries. In certain states such as California, EPA has delegated authority to state agencies.

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. The three major components of water quality standards are designated beneficial uses, water quality criteria, and antidegradation policy. Section 303(d) of the CWA requires states and authorized Native American tribes to develop a list of water quality–impaired segments of waterways. The list includes waters that do not meet water quality standards necessary to support a waterway's beneficial uses even after the minimum required levels of water pollution control technology have been installed at point sources (i.e., single identifiable localized source of pollution). Only waters impaired by pollutants (defined as clean sediments, nutrients such as nitrogen and phosphorus, pathogens, acids/bases, temperature, metals, cyanide, and synthetic organic chemicals [EPA 2002]) are to be included on the list of water quality–impaired segments of waterways; waters impaired by other types of pollution (e.g., altered flow, channel modification) are not included on the list.

Section 303(d) of the CWA also requires states to maintain a list of impaired water bodies so that a total maximum daily load (TMDL) can be established. A TMDL is a plan to restore the beneficial uses of a stream or to otherwise correct an impairment. It establishes the allowable pollutant loadings or other quantifiable parameters (e.g., pH, temperature) for a water body and thereby provides the basis for establishing water quality–based controls. The calculation for establishing TMDLs for each water body must include a margin of safety to ensure that the water body can be used for the purposes of state designation. The calculation also must account for seasonal variation in water quality (EPA 2002). The Central Valley Regional Water Quality Control Board (Central Valley RWQCB) develops TMDLs for the Sacramento River Basin, in which the water bodies that would be affected by the proposed project are located (see discussion of the Porter-Cologne Water Quality Control Act below).

Safe Drinking Water Act

The Safe Drinking Water Act was passed in 1974 to regulate the nation's drinking-water supply. The law, which was amended in 1986 and 1996, requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater. The Safe Drinking Water Act authorizes EPA to set national health-based standards for drinking water to protect against both naturally occurring and human-made contaminants that may be found in drinking water. EPA sets national standards for drinking water to protect against health risks, considering available technology and costs. As part of these standards, enforceable maximum contaminant levels are established for particular contaminants in drinking water. The maximum contaminant levels are reviewed every 3 years.

Central Valley Project Improvement Act

The CVPIA was established in 1992 under Title 34 of Public Law 102-575, the Reclamation Projects Authorization and Adjustment Act. The CVPIA amended previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic water supply uses, and fish and wildlife enhancement as having equal priority with power generation. This act would apply to the proposed project only if Reclamation purchases BVID water.

National Flood Insurance Program

In an attempt to reduce the need for large publicly funded flood control structures and disaster relief, Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. As a result of these laws, development within floodplains has been greatly restricted.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in the floodplains. FEMA also issues flood insurance rate maps for communities participating in the NFIP. Yuba County is a participant in the NFIP. These maps delineate the extent of the flood hazard zones for the 100- and 500-year storm events. The proposed project would not increase flood risks.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Porter-Cologne Water Quality Control Act

The State of California's Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) establishes the basis for water quality regulation within California. The act requires that a "report of waste discharge" be compiled for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface water or groundwater of the state. The beneficial uses of the surface waters of the project area are irrigation, agricultural supply, industrial supply/power, recreational uses, freshwater habitat, fish migration and spawning, and wildlife habitat. Beneficial uses for all groundwater in the Central Valley Region include or potentially include municipal, agricultural, and industrial uses. The Central Valley RWQCB has set water quality objectives for all surface waters in the region concerning bacteria, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. Water quality objectives for groundwater include standards for bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity.

State Nondegradation Policy

In 1968, the State Water Resources Control Board (SWRCB) adopted the nondegradation policy, a policy aimed at maintaining high-quality waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated so as to achieve the highest water quality consistent with maximum benefit to the people of the state and so as to promote the peace, health, safety, and welfare of the people of the state. The policy prescribes the following:

- Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

- Any activity that produces waste or increases the volume or concentration of waste and that discharges to existing high-quality waters would be required to meet waste discharge requirements that would ensure that (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

Central Valley Regional Water Quality Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, whereas the RWQCBs conduct planning, permitting, and water quality control activities. The project area for the proposed project is in the jurisdiction of the Central Valley RWQCB.

The Central Valley RWQCB is responsible for protecting beneficial uses of water resources within the Central Valley Region. The Central Valley RWQCB uses planning, permitting, and enforcement authorities to meet this responsibility and has adopted the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) to implement plans, policies, and provisions for water quality management (Central Valley RWQCB 1998). Beneficial uses of surface waters are described in the Basin Plan and are designated for major surface waters and their tributaries. In addition to identifying beneficial uses, the Basin Plan specifies water quality objectives that are intended to protect the beneficial uses of the Sacramento and San Joaquin River drainage basins. The Central Valley RWQCB has objectives both for regional water quality and for water quality associated with specific water bodies and beneficial uses.

Water Quality Control Plan for the Sacramento–San Joaquin River Basins

The Basin Plan was adopted by the Central Valley RWQCB in 1998. The plan identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and San Joaquin River hydrologic regions, which include waters within Yuba County. Federal and state laws mandate protecting designated "beneficial uses" of water bodies. State law defines beneficial uses as "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (California Water Code, Section 13050[f]).

The beneficial uses of any specifically identified water body generally apply to all tributary streams to that water body. Those water bodies not specifically designated for beneficial uses in the Basin Plan are assigned the Municipal and Domestic Supply (MUN) use, in accordance with SWRCB Resolution No. 88-63. Although specific surface waters have not been identified for groundwater recharge or freshwater replenishment in the Basin Plan, these additional protected beneficial uses are designated in the Basin Plan. Unless otherwise designated by the Central Valley RWQCB, all groundwater is considered suitable or potentially suitable for MUN, agricultural supply, and industrial process supply.

The beneficial uses of the surface waters of the project area are irrigation, agricultural supply, industrial supply/power, recreational uses, freshwater habitat, fish migration and spawning, and wildlife habitat. Beneficial uses for all groundwater in the Central Valley Region include or potentially include municipal, agricultural, and industrial uses.

The Basin Plan contains specific narrative and numeric water quality objectives for surface waters in the region, including several physical properties (e.g., temperature, dissolved oxygen, turbidity, suspended solids, taste and odor), biological constituents (e.g., coliform bacteria), and chemical constituents of concern, such as inorganic parameters (e.g., pH, salinity), toxicity (e.g., mercury) and trace metals, and organic compounds (e.g., oil and grease, pesticides).

Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California

The Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California sets limits for "thermal waste" and "elevated temperature waste" discharged into coastal and interstate waters and enclosed bays and estuaries of California (SWRCB 1975).

California Water Rights

A water right is legal permission to take possession of water and put it to beneficial use. Under the California Water Code, the SWRCB now is responsible for allocating surface water rights and permitting the diversion and use of water throughout the state. California recognizes several different types of rights to take and use surface water, including, but not limited to individual riparian, appropriative, and prescriptive water rights. California water rights are described in more detail in Section 2.5.1 of this EIR.

Watershed Protection Act

The Watershed Protection Act (WPA) applies to the operators of projects that generally make up the SWP and CVP. These projects are operated by DWR and Reclamation, respectively. The act states that, in operating these projects, DWR and Reclamation cannot directly or indirectly deprive the watershed, the area from which the water originates, or the area immediately adjacent that can be conveniently served from the watershed of the prior right to all the water reasonably required to adequately supply the watershed's beneficial needs. The WPA effectively reverses the priority of effective dates for water rights between the dates of the CVP and the SWP water rights and the dates of any applications filed later for use of water within the protected area. This reversal of priority applies to the diversion of natural and abandoned flows for export use by the SWP and CVP.

State Water Resources Control Board Water Right Decision 1641

SWRCB Water Right Decision1641 (D-1641) (SRWCB 2000) and Water Rights Order 2001-05 (SWRCB 2001) contain the current water right requirements to implement the 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary* (1995 WQCP). D-1641 incorporates water right settlement agreements between DWR and Reclamation and certain water users in the Delta and upstream watersheds regarding contributions of flows to meet water quality objectives. However, Reclamation or DWR or both must ensure that objectives are met in the Delta. D-1641 also authorizes the SWP and CVP to use joint points of diversion (JPOD) in the south Delta, and recognizes the process used by the CALFED Bay-Delta Program's Operations Coordination Group to provide operational flexibility in applying or relaxing certain protective standards.

Water quality requirements included in D-1641 control CVP/SWP Delta operations at certain times of the year. For some of the water quality requirements to be met, a portion of Sacramento River inflow must flow through the Delta and become Delta outflow. The portion of Sacramento River flow that must flow through the Delta is determined based on the numerous factors that influence Delta hydrodynamics and water quality (e.g., inflows, exports, tidal cycle, antecedent conditions). Under these conditions, a portion of any additional Delta inflow (such as inflow made available from a water transfer) may be required to be committed to meeting water quality requirements if the increased inflow is to be exported. This portion of water that must go to outflow is typically referred to as carriage water and can reduce the volume of additional Delta inflow that may be exported.

Coordinated Operations Agreement

The 1986 Coordinated Operations Agreement (COA) between DWR and Reclamation set forth procedures for coordinated operations of SWP and CVP facilities. The COA defined formulas for sharing responsibilities for meeting Delta standards contained in SWRCB Water Right Decision 1485 (the existing standard at that time) and sharing unstored flow.

The COA defines the Delta as being in either "balanced water conditions" or "excess water conditions." Balanced conditions are periods when Delta inflows are just sufficient to meet water user demands within the Delta, outflow requirements for water quality and flow standards, and export demands. Under excess conditions, Delta outflow exceeds the flow required to meet water quality and flow standards. Typically, the Delta is in balanced water conditions from June to November and excess water conditions from December through May. However,

depending on the volume and timing of winter runoff, excess or balanced conditions may extend throughout the year.

Under the COA, when water must be released from reservoirs to meet in-basin uses (as defined in the COA), 75% of the water must be provided by the CVP and 25% by the SWP. When unstored water is available for export (i.e., Delta exports exceed storage withdrawals while balanced conditions exist), the sum of CVP stored water, SWP stored water, and the unstored water for export is shared with 55% going to the CVP and 45% to the SWP.

Numerous physical and regulatory changes since 1986 have affected the COA: new facilities, the CVPIA, new water quality and flow standards, and responsibilities associated with biological opinions issued under the federal Endangered Species Act (ESA). These changes created new conditions that required interpretation and agreement for operational and accounting purposes.

Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB) has jurisdiction over flood control in California. It is responsible for ensuring the serviceability of levees and requires permits for any activity that may affect the capacity of the flood control system. The CVFPB cooperates with the U.S. Army Corps of Engineers (USACE) to control flooding along the Sacramento and San Joaquin Rivers and tributaries, and its jurisdiction includes the Central Valley, including all tributaries and distributaries of the Sacramento and San Joaquin Rivers. Within its jurisdiction, the CVFPB enforces appropriate standards for the construction, maintenance, and protection of adopted flood control plans that will best protect the public from floods. Approval by the CVFPB is required for projects or uses that encroach into rivers and waterways within flood control project areas authorized by the federal and state governments and within regulated streams adopted by the CVFPB. According to Table 8.1 in Title 23, Section 112 of the California Code of Regulations, the Feather River and Yuba River are regulated as such. The proposed project would not increase flood risks because the water would be transferred within the range of historical summer and fall flows, which are well below peak winter and spring flood flow levels.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Yuba County General Plan

The Open Space and Conservation Element of the *Yuba County General Plan* (Yuba County 1996) consists of provisions for the protection and enhancement of Yuba County's surface water and groundwater resources. The following objectives and policies may be applicable to the proposed project:

- **Goal 14-OSCO:** Management of the land development process and resources production in a manner which protects groundwater resources.
  - **Policy 62-OSCP:** The County shall encourage the use of surface water supplies for new development as an alternative to groundwater use whenever feasible.
- **Goal 35-OSCO:** Protection of future development projects from the threat of flooding in a 100-year or more frequent flood event.
  - **Policy 152-OSCP:** The County shall continue to maintain floodplain zoning and shall take all necessary steps to maintain its eligibility for the Federal Flood Insurance Program as administered by the Federal Emergency Management Agency.
  - **Policy 155-OSCP:** Natural waterways shall be protected from unnecessary alteration whenever flood protection structures or other forms of construction are proposed.

Lower Yuba River Accord

The Yuba Accord was developed to resolve nearly 15 years of controversy and litigation over instream flow requirements for the lower Yuba River. The Yuba Accord includes three separate but interrelated agreements: a fisheries agreement, conjunctive-use agreements, and a water purchase agreement. These agreements protect and enhance fisheries resources in the lower Yuba River and increase the reliability of the local water supply. They also provide DWR and Reclamation with the increased operational flexibility needed to protect Delta fisheries resources through the Environmental Water Account program, and to provide supplemental water supplies to SWP and CVP water contractors in dry years. The Yuba Accord is discussed in more detail in Section 2.3.2 of this EIR.

Wanger Order

In recent years, CVP and SWP operations have come under increased scrutiny for their impacts on endangered species—specifically delta smelt, distinct runs of Chinook salmon, Central Valley steelhead, and green sturgeon.

In December 2007, U.S. District Court Judge Oliver Wanger invalidated the previous biological opinion on delta smelt and issued an interim remedial order (Wanger Order) specifying flow requirements in Old and Middle Rivers (OMR) for the protection of delta smelt.

CVP and SWP export operations can create reverse or negative flows in Old and Middle Rivers. The Wanger Order requirements limit CVP and SWP Delta exports by specifying flow requirements in these rivers. The flow limits established by the Wanger Order vary by current Delta conditions and decisions made by various technical groups. MBK Engineers (2009: 8) summarizes parts of the Wanger Order that can affect Delta export operations (See Appendix C).

Delta Smelt Biological Opinion from the U.S. Fish and Wildlife Service

The December 2007, U.S. District Court Judge Oliver Wanger, which invalidated the previous biological opinion on delta smelt, has been replaced by the reasonable and prudent alternative (RPA) in the delta smelt biological opinion (Smelt BO) on the effects of CVP/SWP operations. The Smelt BO was issued by the U.S. Fish and Wildlife Service (USFWS) on December 15, 2008. Compared to the Wanger Order, limitations established by the Smelt BO can be more restrictive in January and February and less restrictive from March through June.

Salmon, Steelhead, Sturgeon, and Killer Whale Biological Opinion from the National Marine Fisheries Service

On June 4, 2009, the National Marine Fisheries Service (NMFS) released a new BO on the effects of CVP/SWP operations on salmon, steelhead, sturgeon, and killer whales (Salmon BO). The RPAs included in the Salmon BO have the potential to further restrict SWP and CVP operations, including Delta exports. Potential export restrictions under the Salmon BO would occur from November 1 through June 15, and have significant overlap with restrictions under the Smelt BO. Because the proposed project would authorize transfers of Conservation Water between July 1 and October 31 of each year from 2010 to 2025, the Salmon BO and Smelt BO are not expected to affect the transfers.

Sacramento River Flood Control Project

The primary facilities for controlling flood damage in the Yuba-Feather River system are levees along the flood channels and reservoirs that provide flood storage. The flood control facilities on the Feather and Yuba Rivers are part of the joint federal-state Sacramento River Flood Control Project. USACE, in conjunction with the State of California, developed a flood control plan for the Feather and Yuba Rivers as part of this project. The flood control plan included levee construction, channel improvements, and reservoir flood storage. USACE developed specific design capacities for the river channels and flood control operation rules for Lake Oroville on the Feather

River and New Bullards Bar Reservoir on the North Yuba River, both of which control flows in the Feather River below Marysville. These operating rules are in force for defined flood seasons. During flood operations, USACE monitors the operation of the reservoirs to ensure compliance with the written regulations. The proposed project would not increase flood risks.

3.1.2 ENVIRONMENTAL SETTING

The areas that may be affected by the proposed project have been described in some detail in Chapter 2, "Project Description (Section 2.2, "Project Study Area"). These areas include the Yuba River from New Bullards Bar Reservoir to its confluence with the Feather River, the Feather and Sacramento Rivers downstream of the Yuba River, the Delta, and the CVP/SWP export service area. This section provides additional information related to hydrology and water quality for these areas.

Hydrology and water quality associated with New Bullards Bar and Englebright Reservoirs; the Yuba, Feather, and Sacramento Rivers; the Delta region; and CVP/SWP export service areas were previously described in the *Draft Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Yuba River Accord* (DWR, YCWA, and Reclamation 2007). The hydrology and water quality sections of the joint EIR/EIS are incorporated by reference (pages 5-1 to 6-91, 8-1to 9-266) into this EIR, and this evaluation also relies heavily on the information provided in the Yuba Accord documentation.

HYDROLOGY AND WATER SUPPLY

Yuba River Region

Within Yuba County, the Yuba River supplies the majority of surface water. The Yuba River watershed drains approximately 1,339 square miles of the western Sierra Nevada slope, including portions of Sierra, Placer, Yuba, and Nevada Counties. The watershed drains lands from an elevation of approximately 8,590 feet above mean sea level (msl) in the upper basin down to less than 280 feet above msl at Smartville. The Yuba River is tributary to the Feather River, which is tributary to the Sacramento River. The Yuba River historically contributed more than 40% of the annual flow in the Feather River and has an average annual unimpaired flow of 2.45 million af at Smartville. The primary watercourses of the upper watershed are the South, Middle, and North Yuba Rivers, which flow into the lower Yuba River above Englebright Reservoir.

The portion of the Yuba River that could be affected by the proposed project extends from New Bullards Bar Reservoir downstream to the confluence of the Yuba and Feather Rivers near Marysville, and includes storage and releases from New Bullards Bar Reservoir, releases from Englebright Reservoir, and flows in the lower Yuba River at Marysville (Exhibit 3.1-1).

In the summer and early fall, before the precipitation season, most of the flow in the lower Yuba River is regulated by releases from New Bullards Bar Reservoir. Except for New Bullards Bar Reservoir, only minimal storage exists for regulation of snowmelt within the basin. The smaller storage facilities on the headwaters of the South Yuba and Middle Yuba Rivers usually fill with early runoff, resulting in the uncontrolled flow of much of the spring and early summer snowmelt within the basin.

New Bullards Bar Reservoir is located upstream of Englebright Reservoir. The primary storage reservoir within the Yuba River basin, New Bullards Bar, has a storage capacity of 966,000 af. New Bullards Bar Reservoir is operated by YCWA for a variety of purposes: flood control, water supply, fisheries benefits, hydropower generation, and recreation. Operations for each of these purposes are defined by one or more regulations, licenses, agreements, or contracts. Yuba River operations recently changed to incorporate the Yuba Accord.

Source: DWR, YCWA, and Reclamation 2007, Adapted by EDAW 2009

Yuba River Region **Exhibit 3.1-1**

Englebright Dam and Reservoir are located downstream of New Bullards Bar Dam, at the confluence of the Middle and South Yuba Rivers. Now owned and operated by USACE, Englebright Dam was built in 1941 by the California Debris Commission to impound mining debris that was moving down the Yuba River into the Sacramento Valley. All three branches of the Yuba River flow into Englebright Reservoir. Total storage capacity in Englebright Reservoir is approximately 70,000 af. Englebright Reservoir has limited conservation storage. The reservoir is used primarily to attenuate power peaking releases from New Colgate Powerhouse upstream and for recreation. Because of Englebright Reservoir's limited capacity and operation constraints, transfer water that is released from New Bullards Bar Reservoir generally passes through Englebright Reservoir without modifying Englebright Reservoir's elevations. Therefore, it is expected that any Conservation Water that is transferred would not perceptibly impact Englebright Reservoir's elevations or storage, which are consistent with existing conditions.

The Yuba Accord provides a new method for determining the lower Yuba River's instream flow requirements that provide a greater level of fisheries protection and enhancement than the instream flow requirements specified in RD-1644 (SWRCB 2003). The flow requirements in the Yuba Accord are specified at the Smartville and Marysville gages downstream of Englebright Reservoir (MBK Engineers 2009: 3-4; see Appendix C).

In addition to meeting the instream flow requirements, the Yuba Accord establishes a carryover storage target in New Bullards Bar Reservoir of 650,000 af. New Bullards Bar releases water in excess of the above minimums to reduce storage to this level by the end of September each year. YCWA also reserves 170,000 af of storage space in New Bullards Bar reservoir for flood control at certain times of the year. YCWA has also supplied water from New Bullards Bar Reservoir for municipal, industrial, and fish and wildlife purposes through numerous temporary water transfers lasting less than 1 year each.

The Yuba River continues for approximately 24 miles below Englebright Dam to the confluence with the Feather River near Marysville. This 24-mile-long reach of the Yuba River has been defined as the lower Yuba River. Flow is measured approximately one-half mile below Englebright Dam at the Smartville gage and again approximately 6 miles upstream of the confluence with the Feather River at the Marysville gage. Between these gages, Deer Creek and Dry Creek join the Yuba River approximately 1 mile and 10 miles below Englebright Dam, respectively.

Pacific Gas and Electric Company constructed the Narrows I Powerhouse below Englebright Dam. YCWA constructed the Narrows II Powerhouse below Englebright Dam as part of its Yuba River Development Project. Water released from Englebright Reservoir passes through the Narrows I and Narrows II Powerhouses. The coupled operations of New Bullards Bar Reservoir and Englebright Reservoir, which include releases through the New Colgate, Narrows I, and Narrows II Powerhouses, provide the principal regulation of the lower Yuba River.

The hydrology of the lower Yuba River is highly variable. From May through October, between Englebright Reservoir and Daguerre Point Dam, flow conditions consist of required instream flows plus forecasted releases to meet diversion requirements for agricultural users; in some wetter years, some water is released for power generation. Below Englebright Reservoir, flows range between approximately 1,000 cubic feet per second (cfs) and 1,800 cfs during June, July, and most of August; ramp down in late August and early September to 500–900 cfs; and remain relatively constant at 600–900 cfs for October and November until the rainy season begins.

YCWA supplies water to meet more than 160,000 af of water rights and more than 225,000 af of contracted water along the lower Yuba River below Englebright Reservoir. Water is diverted for irrigation at Daguerre Point Dam and BVID's Pumpline Canal. Daguerre Point Dam is located approximately 12 miles below Englebright Dam and diverts water into YCWA's North and South Canals. BVID's Pumpline Canal is located approximately 1 mile upstream of Daguerre Point Dam. Water is lifted into the Pumpline Canal from a screened pumping facility on the north bank of the river. Combined diversions of all canals have been approximately 300,000 af in recent years (DWR, YCWA and Reclamation 2007).

As described in Section 2.2.1, "Yuba River System," flows above Daguerre Point Dam during July and August are about 600–1,100 cfs higher than flows below the dam because of the diversions at Daguerre Point. Flows below Daguerre Point Dam to the Yuba River's confluence with the Feather River during June–October are approximately 300–1,500 cfs. Below Daguerre Point Dam, baseline flows consist of required instream flows and, in some wetter years, some water that is released for power generation. Data from the Yuba River's Smartville gaging station indicate that flows average 2,600 cfs annually, with the highest flows occurring in February and March.

Feather and Sacramento Rivers

The Sacramento Valley encompasses approximately 6 million acres of developed agriculture and urban areas and undeveloped native areas. The Sacramento River system includes the Sacramento River and its major tributaries: the Feather, Yuba, Bear, and American Rivers and their tributaries. The CVP also imports Trinity River water into the Sacramento River System through facilities on the Trinity River and Clear Creek. Most major streams and rivers in the Sacramento Valley are regulated by reservoirs of various sizes to provide water supply, flood control, hydropower, and other benefits. See Section 2.2.2, "Feather and Sacramento Rivers," for additional information about the hydrology of the Feather and Sacramento Rivers upstream of the Delta.

Sacramento–San Joaquin Delta and Delta Export Service Area

The Delta is an area of approximately 1,300 square miles. Water generally moves west through the Delta and flows out to the Pacific Ocean through San Francisco Bay. As discussed in Section 2.2.3, "Sacramento–San Joaquin Delta," the Delta serves as the hub of California's water supply by channeling water from northern watersheds to export facilities in the southern Delta. SWP and CVP pumping facilities in the southern Delta pump water into the Delta-Mendota Canal and the California Aqueduct for delivery to SWP and CVP contractors in the Delta export service area of each project. Operations of upstream SWP and CVP reservoirs and Delta pumping facilities are governed by various laws, regulations, court orders, agreements, SWRCB decisions, including the COA, D-1641, and the Smelt and Salmon BOs described in Section 3.1.1, "Regulatory Setting." The SWP has executed agricultural and municipal and industrial contracts to supply more than 4 million acre-feet (maf) of water but typically does not deliver this amount because of a combination of hydrology and regulatory constraints.

Browns Valley Irrigation District

As discussed in Chapter 2, "Project Description," BVID has three sources of surface water rights and entitlements within the Yuba River watershed:

- a pre-1914 direct diversion water right of 47.2 cfs from the North Yuba River with a priority date of March 21, 1890, which is the most senior water right on the North Yuba River (see section 10.3, pages 158-160 of SWRCB RD-1644, July 16, 2003);
- appropriative rights under water right permits issued by the SWRCB for operation of Collins Reservoir, a storage facility that is owned and operated by BVID on Dry Creek, a tributary to the Yuba River; and
- a water supply contract with YCWA for delivery of up to 9,500 afy.

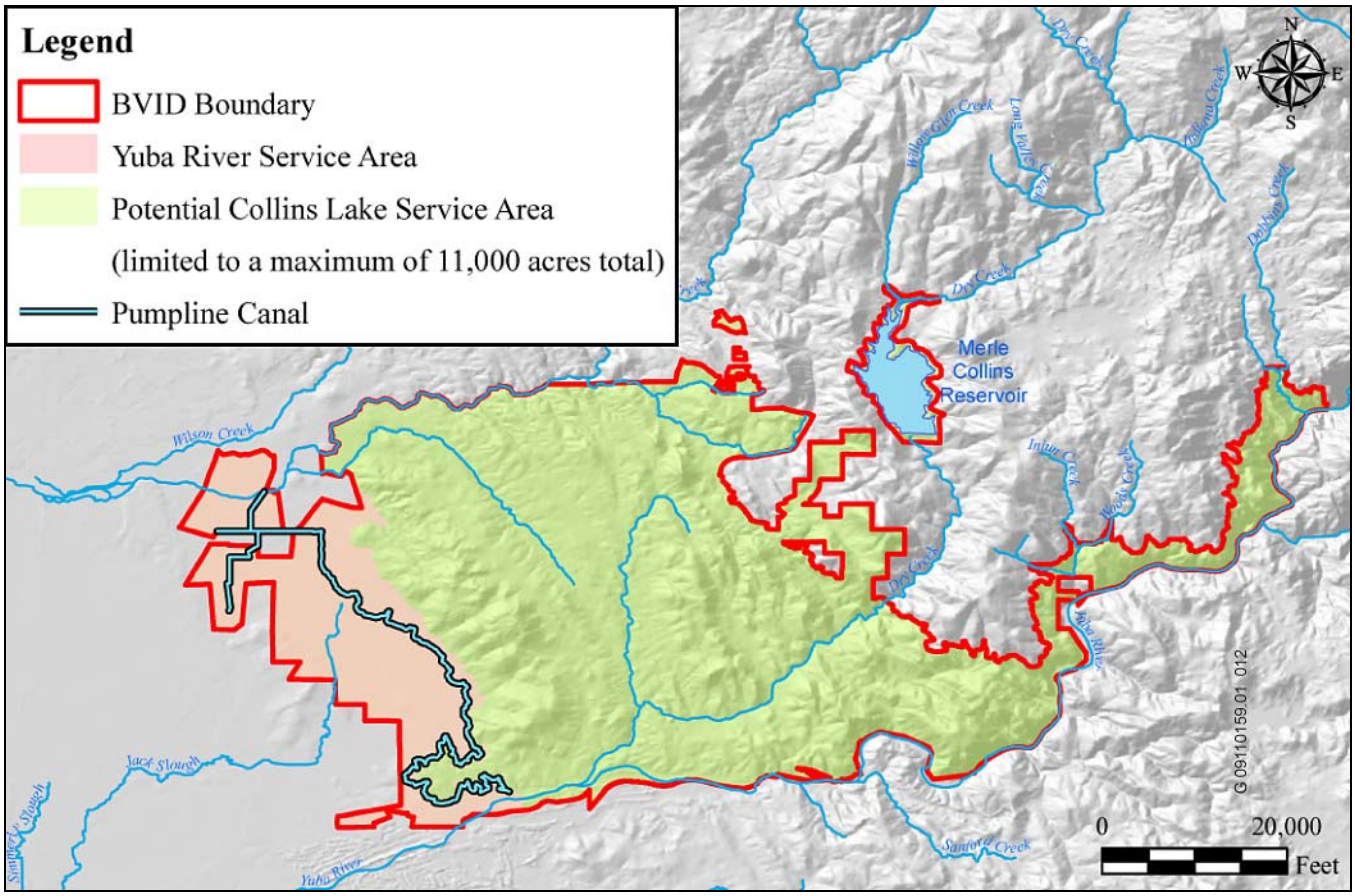
In some years, certain BVID landowners also pump groundwater to supplement surface water supplies provided by BVID and to make water supplies available for programs under the Yuba Accord (MBK Engineers 2002; DWR, YCWA, and USBR 2007).

From about 1890 to 1963, BVID diverted approximately 20,000 af annually under its pre-1914 water right from the North Yuba River at the head of the Upper Main Canal for irrigation use within BVID's service area. BVID's Upper Main Canal, which was constructed during the Gold Rush era, consists of about 20 miles of flumes and ditches. In 1963, when BVID began operating Collins Reservoir, BVID diverted up to 5,500 af per year of its pre-

1914 water right at the Upper Main Canal and diverted the balance of the pre-1914 water right at the Pumpline Canal on the lower Yuba River, below the confluence with Dry Creek.

Water losses on the Upper Main Canal were substantial and typical of losses experienced by similar Gold Rush era water conveyance facilities throughout the Sierra Nevada foothills. In 1990, BVID began a water conservation project to construct a pipeline to deliver water from Collins Reservoir to serve the area that had previously been served from the Upper Main Canal and to terminate the use of the Upper Main Canal for water deliveries. The water conservation project cost about $1.3 million and was funded by a water conservation loan to BVID under a program administered by DWR. The proposed project would utilize the transferable portion of the water conserved as a result of BVID's 1990 Upper Main Water Conservation Project.

BVID is generally divided into two areas for water service purposes: one area that is generally served by the pre-1914 water right (which includes the Conservation Water) and a contract entitlement from YCWA, which are both diverted from the lower Yuba River at BVID's screened Pumpline Canal and pumping facility; and one area that is generally served by deliveries from Collins Reservoir (aka Collins Lake) on Dry Creek (Exhibit 3.1-2). For purposes of convenience in this EIR, the two areas will be called the Yuba River service area and Collins Lake service area. Historically BVID has not transferred Conservation Water unless it has adequate supplies from its pre-1914 water right and its contract with YCWA to make full deliveries to the portion of its service territory that uses water diverted from the Yuba River. When supplies are sufficient to meet the demands of the Yuba River area served from the Yuba River, BVID has transferred the Conservation Water over a period of 2–6 weeks between July 1 and October 31 of each year when feasible.



Source: Data provided by MBK Engineers in 2009, Adapted by EDAW 2009.

Browns Valley Irrigation District Map **Exhibit 3.1-2**

BVID is located within the Sacramento Valley Groundwater Basin, North Yuba Subbasin (Exhibit 3.1-1). As identified in DWR's *California's Groundwater–Bulletin 118*, the North Yuba subbasin lies in the eastern central portion of the Sacramento Valley Groundwater Basin and is bounded on the north by Honcut Creek, on the west by the Feather River, on the south by the Yuba River, and on the east by the Sierra Nevada. The North Yuba subbasin aquifer system is composed of continental deposits of Quarternary to Late Tertiary age, having a cumulative deposit thickness that increases from a few hundred feet near the Sierra Nevada foothills on the east to more than 1,000 feet along the western margin of the basin (DWR 2003).

The potential for artificial recharge of groundwater in the basin is limited because areas that have available storage space typically have overlying soils with very low infiltration rates that would restrict recharge potential (DWR 2003).

The estimated storage capacity for the North Yuba subbasin is 620,000 af. This estimate is based on a surface area of approximately 50,000 acres (78 square miles). Studies of the subbasin show the average basin groundwater levels remained relatively constant from 1950 through 1990.

Before development of irrigation, groundwater within Yuba County was recharged from stream channel seepage and precipitation. Groundwater outflow during the predevelopment period primarily occurred as accretions to local stream channels. Groundwater levels then were close to the land surface. With the development of irrigation based on groundwater pumpage, groundwater levels have fallen substantially in the South Yuba Subbasin, but not in the North Yuba Subbasin, because of the southern portion's reliance on groundwater.

DWR prepared groundwater-level contours for spring conditions in 1960, 1984, and 1990. In 1960, water levels in the North Yuba Subbasin were nearly the same as under predevelopment conditions, with the groundwater table generally sloping down toward Honcut Creek and the Yuba and Feather Rivers. In 1984, groundwater levels remained at relatively high levels, with an overall pattern of continued groundwater flow toward the Yuba and Feather Rivers. In 1990, groundwater levels in the North Yuba Subbasin continued to reflect the relatively small reliance on groundwater in the subbasin (Bookman-Edmonston Engineering1992).

YUBA RIVER WATER QUALITY

Temperature

Rice is cultivated in most areas under agricultural production in the lower Yuba River watershed. Rice farmers require warmer water during spring and summer for rice germination and growth. As a general rule, rice productivity increases with rising water temperatures. Low temperatures early in the growing season (before July 31) can cause delayed or failed germination, and reduce the ability of plants that do germinate to reach productive maturity (Williams and Wenning 2003).

Englebright and New Bullards Bar Reservoirs have a substantial influence on the thermal characteristics of the lower Yuba River. Specifically, these reservoirs operate in tandem to allow releases of cool water from Englebright Dam to the lower Yuba River throughout summer. Both reservoirs are prone to stratification during summer. However, Englebright Reservoir is strongly influenced by operations at New Bullards Bar Reservoir. Both reservoirs utilize low-level releases for power production. These releases typically have very little or no diurnal signal and are well below reservoir surface water temperatures. These constantly cool releases substantially affect the thermal regime of the river, especially downstream of Englebright Dam, which is above Daguerre Point Dam where water is diverted by agricultural users. As a result, the need for warmer water temperatures at the agricultural diversions potentially conflicts with the need for cold water temperatures for coldwater fisheries management in the lower Yuba River.

Mercury

Churchill (1999) estimated that up to 8 million of the 26 million pounds of mercury used in the Sierra Nevada to extract gold through amalgamation may have been lost through hydraulic mining processes during the Gold Rush period. As a result, mercury lies buried in reservoirs and streambeds, where leftover mining debris—"mine tailings" consisting of rock, cobble, and sediment—can be 80–100 feet deep. When mercury reacts with bacteria, it turns into methylmercury, a highly toxic form that accumulates in fish. Large predator fish, such as trout and bass, can contain such high levels of methylmercury (> 0.3 part per million) that they become a concern for human consumption.

In a March 2009 letter addressing the proposed listing of large sections of the Yuba River for mercury pollution on the state's 303(d) list of impaired water bodies by the Central Valley RWQCB, the U.S. Department of Agriculture Forest Service (USFS) suggests that the mercury in this watershed should not be viewed as a watershed-wide issue, but rather as a localized potential threat to water quality because the elemental mercury in the watershed was largely imported to specific gold mining sites. As such, the department recommends in its letter that the Central Valley RWQCB consider listing a shorter segment of the North Yuba River, from New Bullards Bar Reservoir to Englebright Reservoir, because this is the region that is more closely associated with the imported mercury sources.

Other Constituents of Concern

Based on information presented in DWR, YCWA, and Reclamation (2007), the overall water quality of the lower Yuba River is good, and has improved in recent decades as a result of controls on hydraulic and dredge mining operations, and the establishment of minimum instream flow requirements. Dissolved oxygen concentrations, total dissolved solids, pH, hardness, alkalinity, and turbidity are well within acceptable or preferred ranges for salmonids and other key freshwater organisms (Reclamation et al. 2003).

Sacramento and Feather Rivers

As presented in Chapter 9, "Surface Water Quality," of the Yuba Accord EIR/EIS (DWR, YCWA, and Reclamation 2007), the Sacramento River Watershed Program has identified mercury, organophosphate pesticides, and other chemical parameters affecting drinking water quality as primary concerns for the Sacramento River watershed, which includes the Sacramento and Feather Rivers, as well as the Delta.

Sacramento–San Joaquin Delta and Delta Export Service Area

Water quality in the Delta is governed in part by Delta hydrodynamics, which are highly complex. The northern Delta is dominated by the waters of the Sacramento River, which are of relatively low salinity; by contrast, the relatively higher salinity waters of the San Joaquin River dominate the southern Delta. The existing water quality constituents of concern in the Delta can be categorized broadly as metals, pesticides, nutrient enrichment, and associated eutrophication—constituents associated with suspended sediments and turbidity, salinity, bromide, and organic carbon. Water quality constituents that are of specific concern with respect to drinking water exported South of the Delta to the Delta Export Service Area, including salinity, bromide, and organic carbon, are discussed in detail in DWR, YCWA, and Reclamation (2007).

3.1.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact on hydrology and water quality if implementation of the proposed project would:

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- substantially alter the existing drainage pattern of the area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- otherwise substantially degrade water quality; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including as a result of failure of a dam or levee, or involving inundation by seiche, tsunami, or mudflow.

Furthermore, changes in reservoir levels and river flows were considered significant if they would violate minimum instream flow requirements, alter high-flow conditions causing impairment of geomorphic processes or fish passage, or change water quality to such a degree that water quality standards could not be met or beneficial uses would be restricted.

ANALYSIS METHODOLOGY

The analytical approach included the best currently available depiction of Yuba River and CVP/SWP system operations. Current operations for each system were simulated in models developed and maintained by those agencies that operate the facilities of each system and are most familiar with the operating rules, regulations, agreements, and physical limitations. The Yuba River system was modeled by YCWA and its consultants. The CVP/SWP system was modeled by DWR, Reclamation, and their consultants using the CALSIM II model. Brief descriptions of these existing models are provided below.

Operations in these existing models do not include annual transfers of Conservation Water. Therefore, analysis began with simulations of current Yuba River and CVP/SWP operations, with past transfers of Conservation Water superimposed on those operations to establish existing conditions (i.e., environmental setting); CEQA Guidelines are clear that the environmental setting is represented by the physical environmental conditions in the vicinity of the proposed project, as they exist at the time the NOP is published (Section 15125), and therefore past transfers of Conservation Water must be included in the environmental setting for this EIR. Transfer operations were simulated using all operating rules, regulations, agreements, and physical limitations that constrain operations in the existing models.

CALSIM II

CALSIM II is a planning model designed to simulate operations of SWP and CVP reservoirs and water delivery systems for current and future facilities, flood control criteria, water delivery policies, instream flow and Delta outflow requirements, and hydroelectric power generation. CALSIM II is the best available tool for modeling the SWP and CVP and is the main systemwide hydrologic model being used by DWR and Reclamation to conduct planning and environmental impact analyses of proposed projects.

CALSIM II is a simulation-by-optimization model. The model simulates operations by solving a mixed-integer linear program to maximize an objective function for each month of the simulation. CALSIM II was developed to simulate SWP and CVP operations for defined physical conditions and a set of regulatory requirements. The current version of CALSIM II simulates SWRCB D-1641, CVPIA b(2) accounting, export restrictions associated with Old and Middle River flow requirements, and estimates of water transfers that typically occur during periods of prolonged drought. The model simulates these conditions using 82 years of historical hydrology from water years 1922 through 2003.

CALSIM II modeling conducted for the proposed project was based on the Common Assumption model package, developed jointly by DWR and Reclamation. Version 9B was considered the best available depiction of system facilities and operations for this evaluation. CALSIM II common assumptions for the operation of the CVP/SWP system are included as Attachment 1 in Appendix C, *Water Resources Analysis*, MBK Engineers (2009).

Modeling ESA Restrictions

Delta export restrictions for the protection of endangered species present substantial modeling challenges. Many export restrictions are triggered based on real-time monitoring data (e.g., turbidity, fish salvage) and/or decisions made by technical working groups. Simulation of key data or decisions of technical working groups that consider a myriad of different factors and information can be very difficult. DWR and Reclamation are in the process of updating existing planning models such as CALSIM II to address the RPAs in both the Salmon and Smelt BOs.

The Common Assumptions version of CALSIM II was modified to simulate the more restrictive end of the range of Old and Middle River flow criteria specified in Judge Wanger's 2007 interim remedial order. Water operation modeling for the existing condition was based on simulation of SWP and CVP operations under the more restrictive OMR flow criteria. It was assumed that turbidity exceeds 12 nephelometric turbidity units at the sampling stations on December 25 of every year, triggering OMR restrictions in December. Also, it was assumed that delta smelt spawning commences on February 19 and that USFWS imposes the strictest OMR criteria allowed from this day forward through June 20. Table 3.1-1 provides the resulting OMR criteria applied in the modeling. A day-weighted average was applied where the criteria vary over a single month for modeling at a monthly time step. SWP and CVP south-of-Delta delivery allocation procedures were updated to account for resulting reductions in available Delta export capacity.

Table 3.1-1
Assumed Old and Middle River Flow Criteria used in CALSIM II

Dates	CALSIM II OMR Criteria (cfs)
December 25–January 3	-2,000
January 4–February 18	-5,000
February 19–April 14	-750
April 15–May 15	Exports controlled by VAMP criteria
May 16–June 20	-750

Notes:
cfs = cubic feet per second; OMR = Old and Middle Rivers; VAMP = Vernalis Adaptive Management Plan
Source: MBK Engineers 2009: 11

OMR criteria are slightly different than those provided in the RPA of the Smelt BO. Limitations in the Smelt BO can be more restrictive in January and February, and are less restrictive from March through June. Because the proposed Conservation Water transfers would occur each year in the July 1 through October 31 period, such limitations would have little to no effect on the transfers. Therefore, differences between modeled OMR criteria and those specified in the RPA of the Smelt BO would not alter the results of this analysis.

Additionally, criteria specified in the RPA of the Salmon BO are not addressed in the modeling. These criteria may further restrict export operations from November 1 through June 15. Operational changes as a result of the Salmon BO would not substantially change this analysis for several reasons. Through-Delta transfers of Conservation Water would occur during a 2- to 6-week period between July 1 and October 31 of each year. Through-Delta transfers can occur when the following conditions are met. First, the Delta must be in balanced conditions according to COA accounting. Balanced conditions are defined in the COA as periods when it is mutually agreed that releases from upstream reservoirs plus unregulated flows approximately equal the water

supply needed to meet Sacramento Valley in-basin uses plus exports. Second, export pumping capacity must be available at Banks Pumping Plant (Banks). Criteria specified in the RPA of the Salmon BO are not expected to substantially change the occurrence of either of these conditions during most of the potential transfer period (July–October) compared to operations that include OMR flow criteria from the Wanger Order.

Yuba River Model

The Common Assumptions version of CALSIM II does not include an explicit representation of Yuba River operations. Yuba River operations have been simulated in a separate model maintained by YCWA. This model simulates reservoir operations and streamflows on the North, Middle, and South Yuba Rivers and Deer Creek. YCWA provided simulation results that represent the No-Project condition for operations of these reservoirs. These operations included implementation of the Yuba River Accord. The proposed project has the potential to affect Yuba River operations from New Bullards Bar Reservoir downstream to the confluence of the Yuba and Feather Rivers.

Modeling Existing Conditions Transfers

BVID has executed 1-year temporary transfers of Conservation Water in 12 of the 19 years since constructing the Upper Main Water Conservation Project in 1990. Since 2003, transfers have gone through the Delta to an SWP contractor in the Delta export service area. BVID's past Conservation Water transfers are summarized in Table 3.1-2.

Table 3.1-2
Historical Transfers of Conservation Water by Browns Valley Irrigation District

Year(s)	Transferee
1990	California Department of Fish and Game, Gray Lodge Wildlife Refuge
1991–1992	California Department of Water Resources, State Drought Water Bank
1993–1996	Sutter Bypass–Butte Slough Water Users Association
1997	U.S. Bureau of Reclamation[a]
1998–2002	No transfer
2003–2004	Santa Clara Valley Water District
2005–2006	No transfer
2007–2009	Santa Clara Valley Water District

[a] As part of YCWA transfer
Source: MBK Engineers 2009

BVID has transferred or attempted to transfer its Conservation Water to a south-of-Delta SWP contractor under a temporary, 1-year agreement each year since 2003. In 2005 and 2006, BVID contracted to transfer the Conservation Water but was unable to fulfill its obligations because Delta conditions did not allow the transfer of water from north of the Delta. Based on this historical record of similar transfers during most years over the past 20 years, transfer of the Conservation Water to a south-of-Delta SWP contractor must be included as part of the existing conditions.

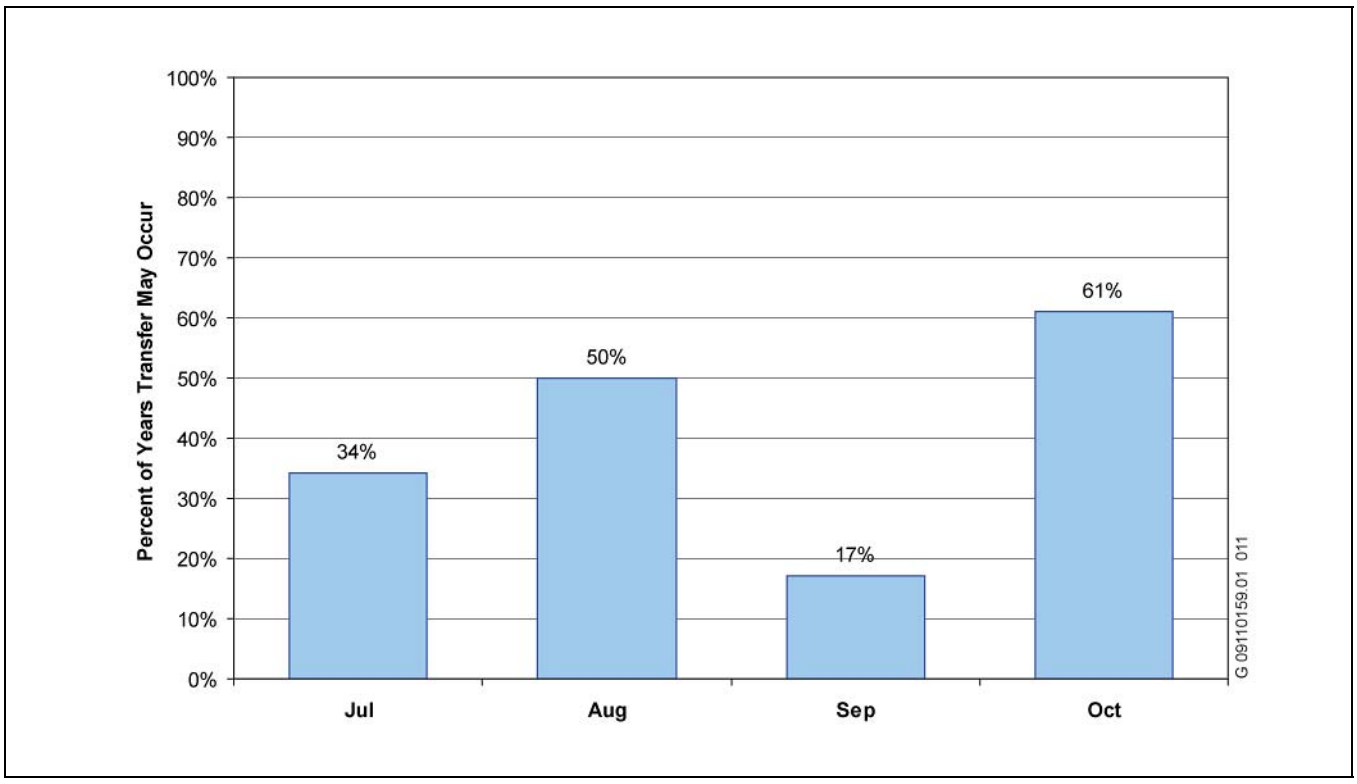
A spreadsheet model, developed from CALSIM II and Yuba River model output, was used to depict an initial operation of the system without transfer of the Conservation Water. CALSIM II and Yuba River model output alone do not represent the No-Project condition because these simulations do not include an explicit representation of Conservation Water or the transfers that have occurred since 1990. To establish existing

conditions, operations to facilitate transfer of the Conservation Water to south-of-Delta transferees have been superimposed on this initial operation.

Under the Proposed Project, BVID would enter into temporary short-term transfer agreements each year with SWP and/or CVP contractors in the Delta export service area. As previously described, BVID has previously entered into these types of agreements with the Santa Clara Valley Water District, but this analysis evaluates water transfers to anywhere in the CVP/SWP Delta export area.

South-of-Delta transfer operations require that Conservation Water be temporarily stored in New Bullards Bar Reservoir as it is conserved. This water is then released for export when Delta conditions allow transfers through the Delta. As previously described, for water to be transferred through the Delta, two conditions must be met: the Delta must be in balanced conditions and Banks export capacity must be available. CALSIM II model results were analyzed to determine whether simulation of the Delta depicted balanced or surplus conditions and to estimate available Banks export capacity. The spreadsheet model ensures compliance with existing flow and water quality requirements throughout the Yuba, Feather, and Sacramento Rivers and the Delta so that water is transferred only when allowed under current regulations.

Exhibit 3.1-3 illustrates the frequency with which the Delta is in balanced conditions, and at least 3,100 af of Banks export capacity is available for each month in the potential transfer period. Annual analysis of results illustrated in this exhibit demonstrates that a transfer of 3,100 af would be possible in at least 1 month of the potential transfer period in approximately 72% of all years (MBK Engineers 2009, Appendix C, pages 12-13).



Source: MBK Engineers 2009: 13

Frequency of Delta Conditions by Month that Allow Transfer of 3,100 Acre-Feet of Conservation Water **Exhibit 3.1-3**

Tables 3.1-3 through 3.1-10 summarize existing conditions at select locations in the system. Results are summarized as average monthly values by Sacramento Valley Water Year Hydrologic Classification Index (40-30-30 Index) and the average for all 82 years simulated.

Table 3.1-3
Average Monthly New Bullards Bar Reservoir Release under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	53	60	157	236	196	235	166	236	206	174	149	60	1,927
AN	42	48	81	120	120	171	137	154	164	137	122	55	1,352
BN	51	43	54	72	57	48	88	134	132	119	127	54	979
D	44	41	38	35	29	33	59	106	95	103	98	48	729
C	44	41	41	38	21	21	34	82	72	85	74	39	591
All Years	**48**	**48**	**85**	**118**	**99**	**118**	**106**	**155**	**143**	**130**	**119**	**53**	**1,223**

Source: MBK Engineers 2009:13

Table 3.1-4
Average Monthly New Bullards Bar Reservoir Storage under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
W	577	594	651	689	749	773	870	947	925	808	681	638
AN	535	543	557	632	702	773	856	945	892	785	678	634
BN	572	555	557	567	632	714	845	925	882	787	673	629
D	518	509	518	529	596	703	797	823	779	691	602	562
C	539	515	498	493	517	577	624	607	568	491	423	390
All Years	**551**	**550**	**569**	**596**	**655**	**719**	**812**	**866**	**828**	**729**	**624**	**583**

Source: MBK Engineers 2009:14

Table 3.1-5
Average Monthly Englebright Reservoir Release under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	61	83	236	348	292	318	239	371	302	186	152	63	2,652
AN	47	70	118	199	194	250	190	249	211	142	125	59	1,852
BN	54	52	78	108	123	93	142	182	149	122	129	55	1,289
D	49	52	57	57	73	88	92	126	104	106	99	50	953
C	51	49	51	54	45	49	52	94	78	88	75	41	726
All Years	**53**	**64**	**125**	**179**	**165**	**180**	**155**	**226**	**186**	**137**	**121**	**55**	**1,647**

Source: MBK Engineers 2009:14

Table 3.1-6
Average Monthly Yuba River at Marysville under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	42	80	249	378	321	345	240	313	241	114	93	44	2,461
AN	30	65	122	219	214	270	183	190	150	70	66	39	1,616
BN	34	44	79	117	139	101	131	119	88	50	69	35	1,007
D	29	45	56	61	82	97	74	62	43	33	39	30	652
C	31	40	48	58	50	53	34	35	22	23	20	22	437
All Years	**34**	**58**	**130**	**194**	**182**	**195**	**147**	**166**	**126**	**66**	**63**	**35**	**1,396**

Source: MBK Engineers 2009:14

Table 3.1-7
Average Monthly Feather River below Marysville under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	245	284	744	1,105	1,026	1,159	645	786	555	502	265	179	7,495
AN	196	190	334	530	672	740	308	424	370	614	419	185	4,981
BN	241	177	239	354	371	298	239	219	288	600	430	190	3,647
D	199	150	201	195	204	289	173	159	256	529	358	179	2,891
C	193	165	200	154	145	156	113	123	226	391	214	150	2,232
All Years	**219**	**205**	**399**	**554**	**553**	**613**	**345**	**402**	**369**	**525**	**329**	**177**	**4,689**

Source: MBK Engineers 2009:14

Table 3.1-8
Average Monthly Sacramento River at Hood under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	838	1,198	2,713	3,396	3,404	3,201	2,346	1,995	1,433	1,234	949	1,088	23,794
AN	661	931	1,327	2,658	2,829	2,856	1,564	1,361	1,002	1,323	963	799	18,276
BN	736	735	1,089	1,520	1,925	1,514	1,112	918	846	1,323	907	753	13,378
D	654	727	962	1,074	1,277	1,390	806	708	757	1,199	832	657	11,043
C	635	578	721	847	826	805	596	456	690	895	594	520	8,164
All Years	**725**	**886**	**1,557**	**2,085**	**2,223**	**2,114**	**1,427**	**1,211**	**1,013**	**1,205**	**866**	**811**	**16,122**

Source: MBK Engineers 2009:14

Table 3.1-9
Average Monthly Delta Outflow under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	412	826	2,955	5,265	5,475	5,046	3,101	2,429	1,509	734	335	569	28,656
AN	243	560	1,133	3,005	3,594	3,527	1,843	1,500	798	629	247	225	17,304
BN	276	331	806	1,439	2,146	1,712	1,318	1,004	510	501	261	205	10,511
D	264	393	581	894	1,282	1,486	864	684	368	374	249	186	7,627
C	257	274	369	642	758	812	533	355	310	287	261	179	5,036
All Years	**309**	**527**	**1,422**	**2,645**	**3,021**	**2,853**	**1,746**	**1,363**	**809**	**535**	**280**	**315**	**15,824**

Source: MBK Engineers 2009:15

Table 3.1-10
Average Monthly SWP Delta Export under Existing Conditions

Average by Year Type (1,000 acre-feet)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
W	303	367	348	316	293	228	173	169	188	403	401	392	3,579
AN	253	291	320	258	217	126	81	77	151	385	401	357	2,917
BN	296	298	278	214	212	110	67	68	109	403	362	327	2,744
D	238	240	287	204	142	59	40	34	102	397	308	256	2,309
C	218	170	222	174	123	44	26	23	101	272	134	149	1,654
All Years	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**137**	**380**	**335**	**310**	**2,779**

Source: MBK Engineers 2009:15

IMPACT ANALYSIS

IMPACT 3.1-1 Effects on Flood Control and Flooding along the Yuba, Feather, and Sacramento Rivers. *The proposed project would not change or modify flood control requirements at New Bullards Bar or Englebright Reservoirs, and changes in the pattern of reservoir operations and river flows as a result of the proposed transfers would be similar to existing conditions. This impact would be* ***less than significant****.*

Changes in the pattern of reservoir operations and river flows as a result of the proposed multiyear temporary 1-year transfers from 2010 through 2025 would be similar to existing conditions because past 1-year transfers of the Conservation Water to south-of-Delta water contractors are part of the existing conditions. The changes in New Bullards Bar Reservoir storage as a result of the proposed transfers would be very small; as with past transfers, they would be well within the range evaluated for the 2007 YCWA transfer to DWR for the Environmental Water Account, which was addressed in the mitigated negative declaration for the 2007 YCWA transfer and the 2007 final EIR/EIS for the Yuba Accord. The proposed project would not change or modify flood control requirements at New Bullards Bar.

The proposed project would occur for a limited time; would involve similar very limited increases in streamflows in the lower Yuba, Feather, and Sacramento Rivers; would cause similar minimal increases in those rivers' water levels, relative to existing conditions involving past transfers; and would not be released during high-flow flood events when the Delta is typically out-of-balance. Therefore, the proposed project would not result in any measurable changes in river geomorphology, nor would it change flood frequency or the extent of inundation along these rivers. Moreover, no adverse effects on flood control or flooding have occurred from previous BVID or YCWA water transfers. This impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.1-2 **Effects on Groundwater and BVID Water Supplies**. *The proposed project would involve transferring Conservation Water that BVID could make available through conservation measures without reducing its deliveries to Yuba River service area customers. Because the proposed transfers would not occur unless sufficient water was available from the Yuba River to meet BVID's water supply demands and would not involve groundwater substitution, this impact would be* ***less than significant****.*

Even with transfer of the Conservation Water, the remainder of BVID's pre-1914 water right along with its contractual right to a supplemental water supply from YCWA, which can be used as needed, are sufficient to serve the water requirements of land served from BVID's Pumpline Canal diversion facility on the Yuba River below Dry Creek, and no significant changes have resulted in a change in water demand for the area served by the Pumpline Canal (MBK Engineers 2002). Therefore, the Conservation Water continues to be available for transfer because BVID has sufficient water to meet its water supply needs by direct diversion from the Yuba River and withdrawal from New Bullards Bar Reservoir storage.

The proposed project would involve transferring Conservation Water that BVID would make available through conservation measures without reducing its deliveries to its customers. As a result, the transfers would not require the operation of a groundwater substitution program. In addition, there is no indication from past BVID transfers that any third-party impacts, such as increased groundwater pumping, would occur because of the availability of sufficient surface water supplies. Surface water supplies are preferred because of lower cost and limited yield from groundwater in portions of BVID. Therefore, this impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.1-3 **Effects on Delta Inflow, Delta Outflow, and South-Delta Water Levels**. *Water transfers would occur only when the Delta is in balanced conditions, and flows in the Delta would be within historical averages and similar to existing conditions. Therefore, this impact would be* ***less than significant****.*

Any water transferred under the proposed project would be pumped or otherwise diverted from the Delta in a manner that is consistent with all applicable court orders, BOs, terms of water right permits and licenses, and other regulatory requirements in effect at the time the water is transferred. Water transfers would occur only when the Delta is in balanced conditions. If required, a portion of the Conservation Water transferred would be deducted for carriage water to ensure that there is no adverse effect on DWR's or Reclamation's ability to meet Delta water quality criteria. Moreover, additional flows in the watershed upstream of the Delta and in the Delta, and additional pumping to implement the proposed project, would occur within historical average flows and Delta pumping rates. Therefore, changes in Delta inflow and outflow would be similar to existing conditions. In addition, the maximum transfer of 3,100 af/yr would be small and have virtually no effect on water levels in the south Delta. For all of these potential impact mechanisms, no significant adverse effects on Delta inflow, Delta

outflow, or south-Delta water levels have occurred from previous BVID or YCWA water transfers. This impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.1-4 **Effects on Delta Exports and Export Service Areas.** *An annual transfer of up to 3,100 af would not create substantial changes in the operations of potential transferees because the transfers would constitute only a very small fraction of total annual water use within the service area of most potential buyers and the Conservation Water would be used to offset a shortage in a buyer's existing supplies due to drought, regulatory constraints, or other reasons. This impact would be* ***less than significant****.*

The proposed project would be used to offset shortages in imported water deliveries from the SWP or CVP to a south-of-Delta water contractor (and willing buyer) in each year that Conservation Water would be transferred. The proposed 1-year water transfers to south-of-Delta water contractors would not be a consistent supply for any one water district within the export service area that could support the construction of new housing or facilities in that service area. The historical BVID transfers show a range of willing buyers, and this trend is expected to occur in the future. For these reasons, the proposed project would not be growth-inducing in any way because a small 1-year water supply is insufficient to plan for or support growth. Also, because of the relatively small volume of water proposed for transfer, the transfers would constitute only a small fraction of total annual water use within the service area of most potential buyers. Therefore, neither conveyance of the Conservation Water to a south-of-Delta water contractor nor use of the Conservation Water within a south-of-Delta export service area would result in a change in the physical environment different from what would occur through the management of other sources of water in these export service areas. This impact would be less than significant.

Transfers would occur only when BVID could meet water demands in the Yuba River service area from its pre-1914 water right and its contract with YCWA; balanced conditions existed in the Delta; and export capacity was available at the SWP Banks Pumping Plant. Therefore, an annual transfer of up to 3,100 af would not create substantial changes in the operations of potential transferees. This impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.1-5 **Effects on Surface Water Quality and Other Instream Beneficial Uses in the Yuba, Feather, and Sacramento River Systems, and the Delta.** *Changes in reservoir operations and river flows would be very small and would not result in measurable changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in affected reservoirs, rivers, or downstream in the Delta. The small flow changes would not cause unreasonable or significant effects on any other instream beneficial uses. This impact would be* ***less than significant****.*

The Conservation Water that would be transferred is water available for transfer in accordance with Section 1011 of the California Water Code, and as a result of BVID's Upper Main Water Conservation Project. This Conservation Water was transferred by BVID in 1990, 1991, 1992, 1993, 2003, 2004, 2007, 2008, and 2009 to Reclamation, DWR's Drought Water Bank, DFG, the Sutter Bypass–Butte Slough Water Users Association, or SCVWD, and these transfers have been completed without any evidence of any significant or unreasonable adverse impacts on water quality or any other instream beneficial uses.

Changes in reservoir operations and river flows would be similar to existing conditions and very small relative to pre-project conditions. As such, the proposed project is not anticipated to result in any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the

reservoir, rivers, or other locales such as the Delta. The slightly increased flows resulting from the proposed transfer could decrease water temperatures in the lower Yuba River slightly, but this benefit would not likely extend into the Feather or Sacramento Rivers because of the small quantity of water. The effects would be greatest in critically dry years because the transfer flows would be a greater proportion of the lower Yuba River flows; these somewhat higher flows would have a slight beneficial effect by lowering water temperatures and increasing water quality in such years. The decreases in New Bullards Bar and Englebright Reservoir's surface water elevations and storage would be extremely minor. The water would essentially pass through Englebright Reservoir with virtually no effect on water elevations, and New Bullards Bar Reservoir storage would be only minimally affected. Because the proposed project would be very similar to existing conditions; and minimum flow requirements would continue to be met in accordance with all applicable laws, regulations, decisions, agreements, BOs, and court orders; this impact would be less than significant.

Mitigation Measures

None required.

3.2 BIOLOGICAL RESOURCES

3.2.1 REGULATORY SETTING

Numerous plans, policies, regulations, and laws could apply to the implementation of the proposed project and its potential effects on biological resources. The proposed project would be implemented in compliance with all of the relevant portions of each plan, policy, regulation, and law presented below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) have authority over projects that may affect the continued existence of a federally listed (threatened or endangered) species. Section 9 of the ESA prohibits the "take" of a federally listed species. Under both federal and state regulations, "Take" is defined, in part, as killing, harming, or harassing. Under federal regulations, "take" is further defined to include habitat modification or degradation where it results in death or injury to wildlife by substantially impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species. To ensure against jeopardy, each federal agency must consult with USFWS or NMFS, or both, if the federal agency determines that its action could affect a listed species. NMFS jurisdiction under the ESA is limited to the protection of marine mammals and anadromous fish; all other species are within USFWS jurisdiction.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain incidental take authorization under Section 10(a) of the ESA. Section 10(a) of the ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan that includes components to minimize and mitigate impacts associated with the take.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the 1996 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, added a provision for federal agencies to consult with NMFS regarding any activity that might adversely affect essential fish habitat (EFH). EFH only applies to commercial fisheries; therefore, for the proposed project, this includes all Chinook salmon (*Oncorhynchus tshawytscha*) habitat but not steelhead trout (*Oncorhynchus mykiss*) habitat. EFH includes all habitats necessary to allow the production of commercially valuable aquatic species, to support a long-term sustainable fishery, and to contribute to a healthy ecosystem. EFH also includes specifically identified waters and substrate necessary for fish spawning, breeding, feeding, or growing to maturity.

Section 404 and 401 of the Clean Water Act

Section 404 of the Clean Water Act (CWA) requires obtaining a permit before executing any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency

and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Jurisdictional wetlands must meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Many surface waters and wetlands in California meet the criteria for waters of the United States, including intermittent streams and seasonal lakes and wetlands.

Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) regulates and issues permits for activities that involve discharging dredged or fill materials into waters of the United States. Fills of less than one-half acre of nontidal waters of the United States for residential, commercial, or institutional development projects can usually be authorized under USACE's nationwide permit (NWP) program, provided the project satisfies the terms and conditions of the particular NWP. Fills that do not qualify for an NWP require a letter of permission or an individual permit.

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to grant water quality certification is delegated by the State Water Resources Control Board to the nine regional boards. Each of the nine regional water quality control boards (RWQCBs) must prepare and periodically update water quality control basin plans pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), described below.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Endangered Species Act

Under the California Endangered Species Act (CESA) and Section 2081 of the California Fish and Game Code, a permit from the California Department of Fish and Game (DFG) is required for projects that could result in the take of a species state listed as threatened or endangered. The CESA prohibits the take of listed and candidate (petitioned to be listed) species. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass," as the federal act does. As a result, the threshold for take under CESA is higher than that under the ESA.

Section 1600 of the California Fish and Game Code

Sections 1600–1603 of the California Fish and Game Code state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources, or to use any material from the streambeds, without first notifying DFG. A Streambed Alteration Agreement must be obtained if effects are expected to occur. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports wildlife, fish, or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Act, waters of the state fall under jurisdiction of the RWQCB. Under this act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface and groundwater, as well as actions to control nonpoint and point sources of pollution. Projects that affect wetlands or waters must meet the waste discharge requirements of the RWQCB. According to Section 401 of the CWA and EPA Section 404(b)(1), an applicant seeking a permit from USACE to conduct an activity that may result in discharge into navigable waters must provide a certification from the RWQCB that such discharge will comply with state water quality standards.

Section 13050 of the Porter-Cologne Act (California Water Code, Division 7) regulates "biological" pollutants subject to regulation by the SWRCB and the affiliated RWQCB. Aquatic invasive plants discharged to receiving waters are an example of this kind of pollutant. The California Water Code generally regulates more substances occurring in discharges and defines discharges to receiving waters more broadly than the CWA.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Yuba County (County) is updating its general plan. The County has not updated the plan since 1996 and is making comprehensive updates to all the elements. Among other things, the plan's new goals address "sustainable and vibrant valley communities, preservation of rural lifestyle, and resource protection." The general plan update does not include provisions for a native tree ordinance or any conservation elements that would affect water deliveries. The County's Web site for the general plan update summarizes the plan's new visions, strategies, and goals (http://www.yubavision2030.org).

The current *Yuba County General Plan* (Yuba County 1996), which is applicable to this project, provides guidance for conserving open space in Yuba County. Goals and policies in the Open Space and Conservation Element of the general plan that potentially apply to the proposed project include watershed protection, vegetation and wildlife protection, conservation of oak woodlands, water use, and flooding and other hazards. The applicable goals (OSCG), objectives (OSCO), policies (OSCP), and implementation strategies (OSCI) are as follows:

Watershed Protection

- **Goal 4-OSCG:** Conserve and protect the Yuba County watershed while providing for timber production, agricultural uses and land development opportunities. *[Note: Open Space conservation objectives and policies under OSCG-4 relating to biological resources, apply to development projects only and therefore do not directly apply to the proposed project.]*

Vegetation and Wildlife Protection

- **Goal 5-OSCG:** Protect open space lands of unique value to plants, fisheries, waterfowl, and other forms of animal life.
  - **Objective 17-OSCO:** No net loss of wetland and riparian habitat.
  - **Objective 19-OSCO:** Retention and protection from incompatible uses of existing designated wildlife areas.
    - **Policy OSCP-77:** Areas adjacent to wildlife areas will be maintained in low-intensity uses, including agriculture, open space, and rural residential.
  - **Objective 21-OSCO:** Identification and protection of remaining areas containing habitat suitable for threatened, endangered, or special-status species.

Conservation of Oak Woodlands

- **Goal 7-OSCG:** Conserve valley oaks and encourage the protection and regeneration of oak woodlands in foothill areas.
  - **Objective 27-OSCO:** Creation of an inventory of remaining valley oaks and development of guidelines for their retention and regeneration.

3.2.2 ENVIRONMENTAL SETTING

The project area ranges from the northern Sierra Nevada foothills, where New Bullards Bar and Englebright Reservoirs are located, through the northern Sacramento Valley and into the Sacramento–San Joaquin Delta (Delta). Water deliveries that would occur under the proposed project would pass through the Delta and could be used in the CVP/SWP service areas.

Information on biological resources in the project area was obtained by compiling and reviewing existing resource maps and literature descriptions of the area, including those published in previous environmental documents, technical reports, and by searching the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants. Biological resources associated with New Bullards Bar and Englebright Reservoirs; along the Yuba, Feather, and Sacramento Rivers; within the Delta; and in the CVP/SWP export service area were previously described in the *Draft Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Yuba River Accord* (DWR, YCWA, and Reclamation 2007). This document relies heavily on the information provided in the Accord documentation.

The following section provides information on the biological resources located in each of the geographic regions included in the project area.

NEW BULLARDS BAR AND ENGLEBRIGHT RESERVOIRS

New Bullards Bar Reservoir is located on the west side of the Sierra Nevada in Yuba County, California, and is surrounded by National Forest lands. This 4,800-acre reservoir was created by the Yuba County Water Agency (YCWA) by impounding the North Fork of the Yuba River for flood control, irrigation water storage, hydroelectric power generation, and recreation. Construction of the 645-foot high concrete New Bullards Bar Dam was completed in 1970. Englebright Reservoir is located downstream of New Bullards Bar Reservoir along the Yuba River and serves as a reregulating afterbay for New Bullards Bar Reservoir.

Plant communities adjacent to New Bullards Bar and Englebright Reservoirs are predominantly oak woodlands with some chaparral, mixed conifer forest, and montane hardwood forest occurring at higher elevations. The oak woodlands are characterized by interior live oak (*Quercus wizlizenii*), blue oak (*Quercus douglasii*), and foothill pine (*Pinus sabiniana*), with several species of understory shrubs and forbs including poison oak (*Toxicodendrom diversilobum*), manzanita (*Arctostaphylos* spp.), California wild rose (*Rosa californica*), and lupine (*Lupinus* spp.). The reservoir shoreline is mostly devoid of vegetation as a result of clearings and frequent fluctuations in water surface elevations.

Wildlife species that typically use oak woodlands and chaparral habitats in the Central Valley are considered to use the habitat adjacent to New Bullards Bar and Englebright Reservoirs. Wildlife species expected to occur at the reservoirs are similar to those found along the Yuba River in this area and include black phoebe (*Sayornis nigricans*), belted kingfisher (*Ceryle alcyon*), and waterfowl, such as common merganser (*Mergus merganser*). A pair of bald eagles (*Haliaeetus leucocephalus*), which are listed as endangered under CESA and fully protected by DFG, are known to nest at New Bullards Bar Reservoir.

New Bullards Bar and Englebright Reservoirs support both cold-water and warm-water fisheries consisting of rainbow trout (*Oncorhynchus mykiss*), kokanee salmon (*Oncorhynchus nerka*), brown trout (*Salmo trutta*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieui*), black and white crappie (*Pomoxis nigromaculatus* and *annularis*), and species of sunfish and bullhead (DWR, YCWA, and Reclamation 2007:10-15).

YUBA RIVER

The Yuba River Basin drains approximately 1,339 square miles of the western Sierra Nevada slope, including portions of Yuba, Sierra, Placer, and Nevada Counties. The Yuba River is a major tributary to the Feather River, historically contributing about 40% of the flow in the Feather River annually. The flow in the Yuba River is partially controlled by releases made from New Bullards Bar Reservoir. YCWA stores water in New Bullards Bar Reservoir to provide for instream flows for fishery enhancement, flood control, power generation, recreation, and to provide irrigation water to member units that have both water rights and water service contracts, such as BVID. YCWA has also supplied water from New Bullards Bar Reservoir for municipal, industrial, and fish and wildlife purposes through a number of temporary water transfers lasting less than 1 year.

Where hydrologic conditions can support them, riparian and wetland vegetative communities are found adjacent to the lower Yuba River and on the river side of the retaining levees. These communities are dynamic and have changed over time as the river has meandered. The plant communities along the river are a combination of remnant Central Valley riparian forests and woodlands, foothill oak/pine woodlands, agricultural grasslands, and orchards. Wildlife species common to the riparian, oak woodland, and agricultural communities occur along the lower Yuba River. Wildlife species associated with riparian areas include a variety of songbirds, raptors, and mammals such as muskrat (*Ondatra zibethica*), river otter (*Lutra canadensis*), mink (*Mustela vison*), and beaver (*Castor canadensis*). Special-status species associated with riparian habitat in the Sacramento Valley include Swainson's hawk (*Buteo Swainsoni*), bald eagle (*Haliaectus leucocephalus*), bank swallow (*Riparia riparia*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

The lower Yuba River provides fish spawning, rearing, and/or migratory habitat for a diverse assemblage of native and introduced fish species. Native species can be separated into anadromous (i.e., species that spawn in freshwater after migrating as adults from marine habitat) and resident species. Native anadromous species that occur in the Yuba River include Chinook salmon and steelhead trout. Native resident species include Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), and rainbow trout. Introduced resident species include smallmouth bass, bluegill (*Lepomis macrochirus*), green sunfish (*Lepomois cyanellus*), and golden shiner (*Notemigonus crysaleucas*) (DWR, YCWA, and Reclamation 2007:10-2). Englebright Dam completely blocks spawning runs of Chinook salmon and steelhead.

FEATHER AND SACRAMENTO RIVERS

The Feather River flows south for 65 miles from Oroville Dam and empties into the Sacramento River near Verona. Flows in the Feather River are controlled primarily by releases from Oroville Dam and flows in the Sacramento River are controlled primarily by releases from Shasta Dam. Release flows from both Oroville and Shasta Dams are coordinated by DWR and Reclamation, respectively, primarily to meet water supply and environmental needs downstream.

The lower Feather River is the largest tributary to the Sacramento River and supports a diversity of riparian and wetland plant communities and associated wildlife. Willow scrub riparian habitat occupies frequently flooded areas closest to the river. Cottonwoods (*Populus* spp.) are more prominent in less frequently flooded areas, but still require and tolerate regular inundations. Valley oaks (*Quercus lobata*) occupy the terraces along the river. Backwater areas support freshwater emergent wetlands, which contribute to the overall habitat diversity of the river. Wildlife species typically found in riparian habitats of the Central Valley use the riparian habitats associated with the Feather River. Additionally, the lower Feather River provides riverine habitat, which is used by several otherwise terrestrial species. Mammals, such as river otter and muskrat, directly use riverine habitat for foraging and cover. Herons, egrets, and ospreys typically forage on fish and amphibians living in the river. Several amphibians and some reptiles inhabit riverine habitats for at least part of their life cycles. The lower Feather River supports a variety of anadromous and resident fish species, including those described above for the Yuba River.

Much of the Sacramento River is confined by levees that reduce the natural diversity of riparian plant communities and associated wildlife. Riparian vegetation along the lower Sacramento River is largely confined to narrow bands between the river and the river side of the levees. The riparian plant communities consist of valley oaks, cottonwoods, wild grape (*Vitis californiaca*), box elders (*Acer negundo*), elderberry shrubs (*Sambucus Mexicana*), and various willow species. The largest and most significant tract of riparian forest remaining on the Sacramento River is a stretch between Chico Landing and Red Bluff. Freshwater emergent wetlands occur in some slow-moving backwaters and primarily are dominated by bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), rushes (*Juncus* spp.), and sedges (*Carex* spp.). A variety of wildlife species directly use the riverine habitat provided by the Sacramento River. As in the Feather River, mammals such as river otters and muskrats use riverine habitats for foraging and cover. Herons, egrets, and ospreys typically forage on fish and amphibians living in the river, and amphibians and some reptiles inhabit riverine habitats for at least part of their life cycles.

Wildlife refuges along the Sacramento River provide habitat for resident and migratory waterfowl, threatened and endangered species, and aquatic biota dependent on wetlands. These refuges include the Sacramento, Colusa, Sutter, and Delevan National Wildlife Refuges and Gray Lodge Wildlife Management Area. Water supplies for certain wildlife refuges within the Central Valley are administered through Central Valley Project Improvement Act programs that acquire and convey water.

The lower Sacramento River is predominantly channelized, leveed, and bordered by agricultural lands. Aquatic habitat in the lower Sacramento River is characterized primarily by glides (a calm stretch of slow-flowing water) and pools, is depositional, and has lower water clarity and habitat diversity than the upper portion of the river. Many of the fish species described above use the lower river to some degree, even if only as a migratory pathway to and from upstream spawning and rearing grounds. For example, adult Chinook salmon and steelhead primarily use the lower Sacramento River as an immigration route to upstream spawning habitats and an emigration route to the Delta. The lower river also is used by other fish species (e.g., Sacramento splittail [*Pogonichthys macrolepidotus*], striped bass [*Morone saxatilis*]) that make little to no use of the upstream areas. Fish species composition in the lower portion of the Sacramento River includes resident and anadromous cold- and warm-water species. Many fish species that spawn in the Sacramento River and its tributaries depend on river flows to carry their larval and juvenile life stages to downstream nursery habitats. Native and introduced warm-water fish species primarily use the lower river for spawning and rearing, with juvenile anadromous fish species also using the lower river and nonnatal tributaries, to some degree, for rearing.

DELTA REGION

Historically, the Delta supported extensive areas of saline and freshwater emergent marshes. Today, the Delta contains about 641,000 acres of agricultural land (72% of the total land area), which dominates its lowland areas. Hundreds of miles of waterways divide the Delta into islands, some of which are below sea level. The Delta has more than 1,000 miles of levees that protect these islands. Much of the freshwater and saline emergent marsh habitat formerly in the Delta has been lost as a result of urban and agricultural development, flood control, and water supply projects; however, some emergent marsh habitat, such as at Suisun Marsh, remain in the Delta. The remaining areas of emergent marsh provide important habitat for many resident and migratory wildlife species. An estimated 25% of all warm-water and anadromous sport fishing and 80% of California's commercial fishery depend on species that live in or migrate through the Delta. The Delta serves as a migration path for all Central Valley anadromous species returning to their natal rivers to spawn. Adult Chinook salmon move through the Delta during most months of the year. Salmon and steelhead juveniles depend on the Delta as transient rearing habitat during migration through the system to the ocean and could remain for several months, feeding in marshes, tidal flats, and sloughs. In addition, Delta outflow influences abundance and distribution of fish and invertebrates in the bay through changes to salinity, currents, nutrient levels, and pollutant concentrations (Moyle 2002:32). Delta smelt (*Hypomesus transpacificus*) is a key species driving many of the ongoing water management decisions in the Delta.

Lower Yuba River Accord (DWR, YCWA, and Reclamation 2007) as occurring along the project-related reservoirs and rivers were also evaluated.

Special-Status Plants

Special-status plant species identified in the CNDDB as occurring within the 500-foot buffer around the reservoir and river are listed in Table 3.2-1, along with their listing status, habitat, distribution, flowering period, and occurrence information.

Three special-status plant species previously documented within the 500-foot buffer area include Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*), dwarf downingia (*Downingia pusilla*), and Hartwegs' golden sunburst (*Pseudobahia bahiifolia*). The location of the previously documented occurrences is shown in Exhibit 3.2-1.

Special-Status Wildlife

Special-status wildlife species identified in the CNDDB are listed in Table 3.2-2, along with their listing status, habitat, and occurrence information. Seven special-status wildlife species were identified within the 500-foot buffer area and include five bird species, tricolored blackbird (*Agelaius tricolor*), Swainson's hawk, western yellow-billed cuckoo, bald eagle, and bank swallow (*Riparia riparia*); one invertebrate, valley elderberry longhorn beetle; and one mammal, pacific fisher (*Martes pennanti pacifica*). The location of the previously documented occurrences is shown in Exhibit 3.2-1.

Other species not identified in the 500-foot buffer but that have the potential to occur in the lake, river, riparian, or associated wetland habitat include western pond turtle (*Actinemys marmorata*) and California yellow-legged frog (*Rana aurora draytonii*).

Special-Status Fish

Special-status fish species potentially occurring in the study area were identified through a review of environmental documents for other projects in the region. Table 3.2-2 presents the special-status fish species that could occur within the study area, their regulatory status, and the water body where each species is anticipated to occur.

3.2.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact on biological resources if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by DFG, USFWS, or NMFS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

Table 3.2-1
Special-Status Plant Species Documented in the Study Area

Species	Status[1]			Habitat	Occurrence Information
	Fed	State	CNPS		
Plants					
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	—	—	1B	Chaparral, cismontane woodland, lower montane coniferous forest; valley and foothill grassland, often found in roadcuts; elevation of 968–2,900 feet Blooming period: May–July	Documented in the California Natural Diversity Database (CNDDB) within 500-foot buffer area, on the east bank of the Yuba River, approximately 3 miles upstream of Englebright Reservoir
Dwarf downingia *Downingia pusilla*	—	—	2	Valley and foothill grassland (mesic), vernal pools, almost always under natural conditions; elevation of 1–1,460 feet Blooming period: March–May	Documented in the CNDDB within 500-foot buffer, approximately 2.5 miles southwest of Browns Valley; exact location unknown; single occurrence from 1965 describes the habitat as a vernal pool bed on open rolling foothill plains
Hartweg's golden sunburst *Pseudobahia bahiifolia*	E	E	1B	Cismontane woodland, valley and foothill grassland; clay soils, often acidic; predominantly on northern slopes, but also along shady creeks and near vernal pools; elevation of 49–492 feet Blooming period: March–April	Documented in the CNDDB within the 500-foot buffer, near the junction of the Yuba and Feather Rivers; original collection in 1848

[1]Legal Status Definitions

California Department of Fish and Game:
E = endangered
FP = fully protected (legally protected)
SSC = species of special concern (no formal protection)
T = threatened (legally protected)

California Native Plant Society (CNPS) Listing Categories:
1B = plants rare, threatened, or endangered in California and elsewhere
2 = Plants considered rare or endangered in California but more common elsewhere (but legally protected under the federal Endangered Species Act or California Endangered Species Act)

Sources: CNDDB 2009, CNPS 2009, Hickman 1993, data compiled by EDAW in 2009

Table 3.2-2
Special-Status Fish and Wildlife Species Documented in the Study Area

Species	Status[1] Fed	Status[1] State	Habitat	Occurrence Information
Amphibians and Reptiles				
California red-legged frog *Rana aurora draytonii*	T	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent vegetation; must have access to upland habitat for estivation.	Not documented in the California Natural Diversity Database (CNDDB) within 500-foot buffer area but has a low potential to occur in wetland and backwater habitat found in the study area.
Northwestern pond turtle *Actinemys marmorata marmorata*	—	SSC	Permanent or nearly permanent water in a wide variety of habitats with basking sites and suitable uplands for nesting.	Not documented in the CNDDB within 500-foot buffer area but is likely to occur in wetland and backwater habitat found in the study area.
Birds				
Tricolored blackbird *Agelaius tricolor*	—	SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California; requires open water, protected nesting substrate and foraging area with insect prey.	Documented in the CNDDB within 500-foot buffer area at three locations along the Yuba River, between Englebright Reservoir and the town of Marysville; two of three populations are believed to be extirpated, one extant population at confluence of Dry Creek and Yuba River.
Swainson's hawk *Buteo swainsoni*	—	T	Breeds in grasslands with scattered trees, associated with juniper-sage flats, riparian areas, savannahs, and agricultural or ranch areas; requires adjacent suitable foraging areas that support rodent populations.	Documented in the CNDDB within 500-foot buffer area at numerous locations, all south of Yuba City along the Feather River; nests observed in large trees, usually near riparian habitat and orchards.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	—	E	Riparian forest nester, along broad, lower floodplains of larger river systems with dense willow, often mixed with cottonwood, and with understory of blackberry, nettle, and wild grape.	Documented in the CNDDB within 500-foot buffer area: from historical records in 1800s near confluence of Yuba and Feather Rivers and in 1985, 1986, and 1987 in Bobelane Sanctuary, approximately 2 miles north of the town of Nicolaus.
Bald eagle *Haliaeetus leucocephalus*	—	E/FP	Ocean shorelines, lake margins, and permanent rivers; nests in large trees with open branches, usually within 1 mile of water; roosts communally in winter.	Documented in the CNDDB within 500-foot buffer area at New Bullards Bar Reservoir, since 1988; nest monitored annually by U.S. Forest Service, several eagles also overwinter at this location.
Bank swallow *Riparia riparia*	—	T	Colonial nester, primarily in riparian and other lowland habitats, near streams, rivers, lakes, and ocean, west of the desert; requires vertical banks/cliffs with fine-textured, sandy soils.	Known to occur at numerous locations within the 500-foot buffer, all south of Yuba City along the Feather River; colonies documented on steep banks and levees in sandy soils.

Table 3.2-2
Special-Status Fish and Wildlife Species Documented in the Study Area

Species	Status[1]		Habitat	Occurrence Information
	Fed	State		
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	—	In Central Valley in association with blue elderberry shrubs (*Sambucus Mexicana*); lays eggs in shrubs with 2–8 inch diameter stems; some preference shown to stressed elderberry shrubs.	Documented in the CNDDB within 500-foot buffer area approximately 2 miles Northeast of the town of Tudor, on east bank of the Feather River, at Star Bend boat ramp.
Mammals				
Pacific fisher *Martes pennanti pacifica*	—	SSC	Coniferous forests and deciduous riparian areas with dense canopy; cavities, snags, logs, and rocky areas for cover and dens; needs large areas of mature, dense forest.	Documented in the CNDDB within 500-foot buffer area near the New Bullards Bar Reservoir dam; single occurrence.
Fish				
Central Valley fall-/late fall-run Chinook salmon *Oncorhynchus tshawytscha*	—	SSC	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Sacramento–San Joaquin Delta (Delta).	Known to occur in the Sacramento, Feather, and Yuba rivers, and in the Delta.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T	T	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Known to occur in the Sacramento, Feather, and Yuba Rivers, and in the Delta.
Central Valley winter-run Chinook salmon *Oncorhynchus tshawytscha*	T	E	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Known to occur in the Sacramento River and the Delta.
Central Valley steelhead *Oncorhyncus mykiss*	T	—	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Known to occur in the Sacramento, Feather, and Yuba Rivers, and in the Delta.
Delta smelt *Hypomesus transpacificus*	T	T	Spawns in tidally influenced freshwater wetlands and seasonally submerged uplands; rears seasonally in inundated floodplains, tidal marsh, and Delta.	Known to occur in the Delta.
Southern Distinct Population Segment of North American green sturgeon *Acipenser medirostris*	T	SSC	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Known to occur in the Sacramento and Feather Rivers and the Delta.

Table 3.2-2
Special-Status Fish and Wildlife Species Documented in the Study Area

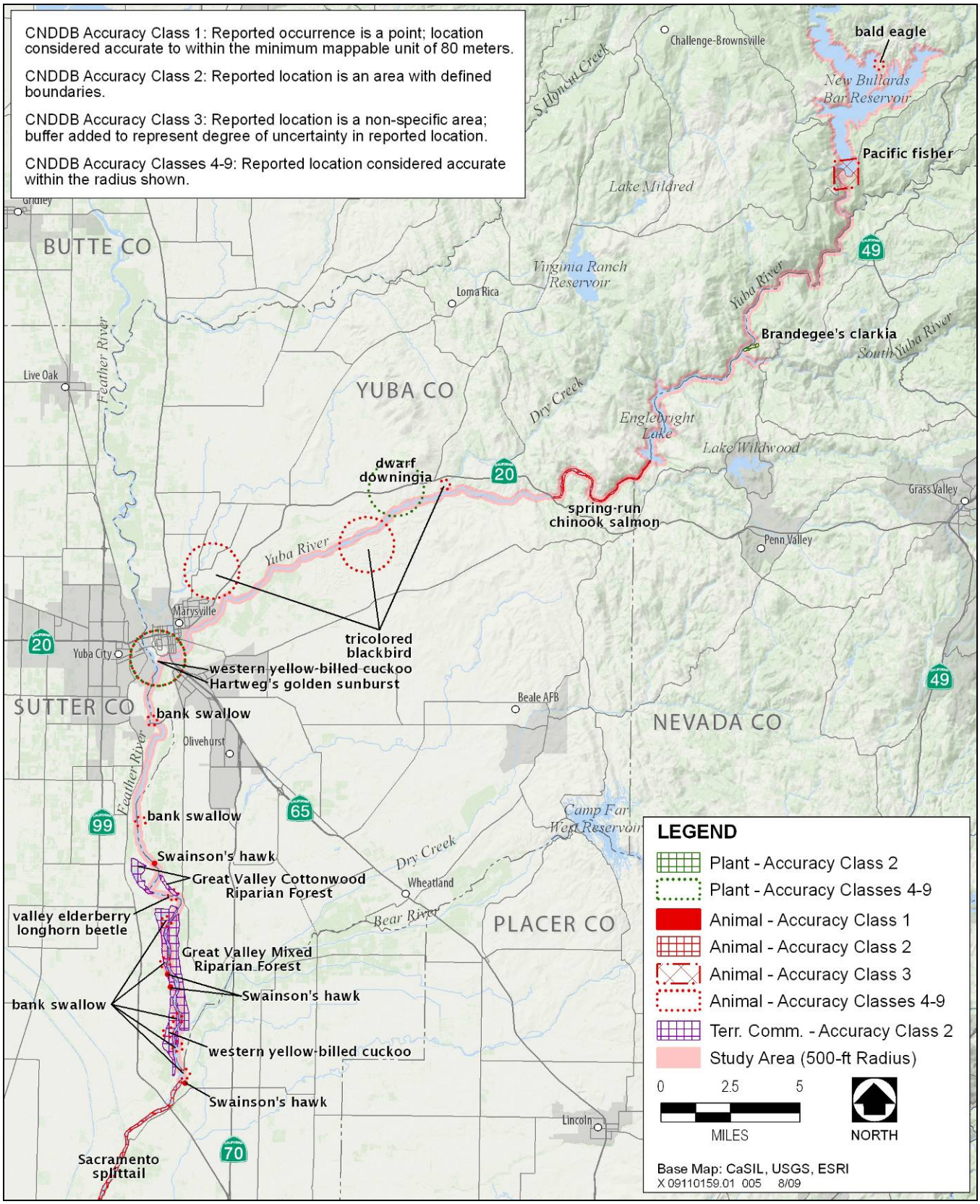
Species	Status[1]		Habitat	Occurrence Information
	Fed	State		
Hardhead *Mylopharodon conocephalus*	—	SSC	Spawning occurs in pools and side pools of rivers and creeks; juveniles rear in pools of rivers and creeks, and shallow to deeper water of lakes and reservoirs.	Known to occur in the Sacramento, Feather and Yuba rivers and Delta.
Longfin smelt *Spirinchus thaleichthys*	—	SSC	Most abundant in San Pablo and Suisun bays (Moyle 2002); tends to inhabit the middle to lower portion of the water column; spends early summer in San Pablo and San Francisco bays, generally moving into Suisun Bay in August; most spawning is from February to April and the majority of adults perish following spawning.	Known to occur in the Delta.
River lamprey *Lampetra ayresi*	—	SSC	Coastal streams; adults require permanent streams with clean gravel and riffles for spawning, ammocoetes require sandy backwaters or stream edges to bury themselves, with temperatures not exceeding 77°F; adults migrate back into freshwater in the fall and spawn from April to June in tributary streams; final stages of metamorphosis takes place immediately upriver from salt water and adults enter the ocean in late spring. Adults spend 3 to 4 months in salt water.	Known to occur in the Sacramento River and the Delta.
Sacramento perch *Archoplites interruptus*	—	SSC	The only populations today that represent continuous habitation within their native range are those in Clear Lake and Alameda Creek. Sacramento perch are often associated with beds of rooted, submerged, and emergent vegetation and other submerged objects. Sacramento perch are able to tolerate a wide range of physicochemical water conditions. Most populations today are established in warm, turbid, moderately alkaline reservoirs or farm ponds.	Historically occurred in Sacramento and San Joaquin Rivers and tributaries; depleted in native range, and now are restricted to a few locations, principally ponds and reservoirs where they are stocked.
Sacramento splittail *Pogonichthys macrolepidotus*	—	SSC	Spawning and juvenile rearing from winter to early summer in shallow weedy areas inundated during seasonal flooding in the lower reaches and flood bypasses of the Sacramento River including the Yolo Bypass.	Known to occur in the Sacramento and Feather Rivers and the Delta.
San Joaquin roach *Lavinia symmetricus*	C	SSC	Spawning occurs in pools and side pools of small rivers and creeks; juveniles rear in pools of small rivers and creeks.	Known to occur in the San Joaquin River and tributaries and Delta.

[1]Legal Status Definitions

U.S. Fish and Wildlife Service and National Marine Fisheries Service:
E = endangered (legally protected)
T = threatened (legally protected)

California Department of Fish and Game:
E = endangered
FP = fully protected (legally protected)
SSC = species of special concern (no formal protection)
T = threatened (legally protected)

Sources: CNDDB 2009, data compiled by EDAW in 2009



Source: CNDDB 2009.

CNDDB-Recorded Occurrences of Special-status Species within 500-feet Search Radius **Exhibit 3.2-1**

- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan or policies or ordinances protecting biological resources; or
- have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species.

This analysis of impacts on biological resources resulting from implementation of the proposed project is based on review of existing documentation of these resources in the study area and on the results of the water resources modeling analysis (refer to Section 3.1, "Hydrology and Water Quality").

ANALYSIS METHODOLOGY

Analyses of impacts on biological resources is based on the examination of potential changes to habitats within and adjacent to the reservoirs and along the rivers that would result from proposed project implementation and the known distribution of special-status species and sensitive natural communities, such as riparian habitats and wetlands in the study area. The proposed project does not include construction activities and therefore would not physically disturb terrestrial or aquatic biological resources through typical construction-related activities. The proposed project could potentially affect fisheries and aquatic ecosystems and riparian and wetland resources. The effects could result indirectly from water transfer operations, which could slightly alter the water levels and flow regimes in reservoirs and rivers.

IMPACT ANALYSIS

IMPACT 3.2-1 Effects on Special-Status Fish and Aquatic Habitats. *Annual short-term releases of Conservation Water would not result in significant changes to aquatic habitats or the native fish community, including special-status fish species, in the study area. This impact would be* ***less than significant****.*

The proposed project, which involves a short-term release of the relatively small amount of Conserved Water (3,100 af), would not result in significant changes to aquatic habitats, sensitive natural wildlife communities, including special-status fish species in the study area. There is no evidence that the proposed project's minimal effects on reservoir volume or flows in the Yuba, Feather, and Sacramento Rivers and Delta would have a significant impact on any species reliant on those water bodies because the proposed project would occur for a limited time on an annual basis, would involve very minor changes in flows, would cause minimal changes in water levels, and past BVID water transfers have not had any known significant effects on fish or aquatic habitats. Because of the nature of the project and minimal changes in the existing conditions, the proposed project would not interfere with existing migration patterns or rearing practices of aquatic or terrestrial species. These changes in hydrologic conditions would not result in a discernable change in aquatic habitats. Therefore, this impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.2-2 **Effects on Special-Status Plant and Wildlife Species.** *The proposed project would result in temporary changes in storage and releases from New Bullards Bar Reservoir and flows in downstream rivers. However, the changes in storage and flow conditions would be extremely small and are not expected to measurably affect riparian and wetland communities along the edges of reservoirs, banks of the rivers, or adjacent upland communities. As a result, no measureable changes in existing habitat for special-status species are expected to occur. This impact would be* ***less than significant****.*

Several special-status plant and wildlife species are known to occur within 500 feet of the shoreline of the reservoirs and along the downstream rivers. Potential habitat for additional special-status plant and wildlife species may also be present in the project area farther downstream. However, the proposed project does not involve the direct alteration of existing habitat for common and special-status species and does not involve any other aspects that could adversely affect special-status species or their habitat. As a result, no adverse effects on any special-status plant and wildlife species are expected to result from implementation of the proposed project. This impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.2-3 **Effects on Federally Protected Wetland or DFG-Regulated Riparian Habitat Associated with Changes in Reservoir Storage and Releases and Downstream River Flows.** *The proposed project would result in temporary changes to storage and releases from New Bullards Bar Reservoir but would not measurably affect riverine, riparian, and wetland habitats that exist within New Bullards and Englebright Reservoirs; the Yuba, Feather, and Sacramento Rivers; the Delta region; or the CVP/SWP export service area. Temporary changes would be very small and remain within the range of variability that currently exists, which include past 1-year transfers of the same total volume, and would have no discernable adverse effects on wetland and riparian habitat. This impact would be* ***less than significant****.*

Riparian and wetland habitats within the study area exist along the edges of lakes and rivers and are subject to potential effects of increased or decreased reservoir levels and altered stream flows. However, the changes would be similar to those that currently occur and are very small relative to the overall water volumes. As in previous years, increases in storage would occur in spring and early summer of some water year types and decreases in storage would occur in late summer and fall of some water years (refer to Section 3.1, "Hydrology and Water Quality"). Overall, storage and release of 3,100 af would be very small, even in the most extreme water year types, and would be within the range of variability in reservoir releases and flows in affected rivers that currently exists under the existing condition. In addition, the transfer would occur only in compliance with all applicable laws, regulations, administrative decisions, agreements, BOs, and court orders. There would be no construction or other activities that would result in physical disturbance. As a result, the proposed project would not adversely affect protected wetlands or regulated riparian habitat and the impact would be less than significant.

Mitigation Measures

None required.

IMPACT 3.2-4 **Conflicts with Provisions of a Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP); or Other Approved Local, Regional, or State Plan Protecting Biological Resources.** *The proposed project would not result in inconsistencies with the conservation goals and strategies in any HCP, NCCP, or other approved local, regional, or state plans being developed or in place to protect biological resources. This impact would be* ***less than significant****.*

There are no approved plans applicable to the project. Several regional conservation planning efforts are underway in the project region; however, none of these efforts apply to the proposed project and the project would not influence these planning efforts. Because the proposed project would include changes in storage and flow that are similar to the existing conditions and very small relative to the overall water volumes, the proposed project would not adversely affect the conservation of land, common and sensitive habitat, common and special-status species, or other biological resources addressed in conservation plans. This impact would be less than significant.

Mitigation Measures

None required.

4 CUMULATIVE IMPACTS AND OTHER CEQA-REQUIRED SECTIONS

4.1 CUMULATIVE IMPACTS

The State CEQA Guidelines require that the cumulative impacts of a proposed project be addressed in an EIR. This cumulative impact analysis discusses the cumulative impacts of the BVID Multiyear Series of Temporary Water Transfers Project and other closely related, reasonably foreseeable projects. This section describes the methodology used for evaluating cumulative impacts of the proposed project, and the impacts of other projects and their relationships to the proposed project. This section summarizes the cumulative impacts in each resource area. The cumulative impact analysis uses both quantitative tools (e.g., hydrologic modeling) and qualitative analyses to determine the potential cumulative impacts of the proposed project and other closely related projects.

4.1.1 APPROACH TO CUMULATIVE IMPACT ANALYSES

Section 21083 of the Public Resources Code requires that an EIR discuss impacts of a project when the project's incremental effect is "cumulatively considerable." According to Section 21083, "'cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (see also Sections 15130[a] through 15130[3] of the State CEQA Guidelines). Sections 15355 and 15130 of the State CEQA Guidelines indicate that cumulative impacts are to be analyzed in the context of "closely related" projects and projects "causing related impacts."

Pursuant to Section 15130(b) of the State CEQA Guidelines,

> [t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the other identified projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

If an incremental effect of the project is not considered cumulatively considerable, the EIR must briefly describe the basis for the conclusion that the incremental effect is not cumulatively considerable.

4.1.2 CUMULATIVE CONTEXT

Cumulative effects result from the incremental impact of the proposed series of water transfers when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or entity undertakes them. Cumulative effects can result from individually minor but collectively significant actions taking place over time. CALFED Bay-Delta Program (CALFED) actions, Central Valley Project Improvement Act (CVPIA) actions, and ongoing SWP and CVP operations and actions in particular are all highly adaptable programs subject to great change as hydrologic, environmental, regulatory, and water supply conditions change.

Ongoing operations of BVID, YCWA, the SWP, the CVP, CALFED's Operations Group, and water contractors are complex and part of the affected environment. Both the SWP and the CVP are complex networks of reservoirs and delivery systems. SWP and CVP management decisions to provide water for water contractors require balancing water for irrigation and domestic water supplies, fish and wildlife protection, restoration and mitigation, and power generation. In making decisions about SWP and CVP operations, DWR and Reclamation collectively use criteria related to reservoir operations and storage, downstream conditions and needs, prevailing water rights

and environmental requirements, flood control requirements, carryover storage objectives, reservoir recreation, power production capabilities, reserves of cold water, pumping costs, contract requirements, court orders, biological opinions, and other factors. The possibility of using multiple water sources for some requirements and environmental opportunities adds flexibility to project operations and complexity to operations decisions.

DWR and Reclamation participate in several statewide programs that currently involve or will involve water transfers from stored surface water, groundwater substitution, or fallowing farmland. In addition to DWR's Dry Year Water Purchase Program and Drought Water Bank, other actions include CALFED programs, such as the Environmental Water Account (EWA), the Environmental Water Program, and the state's Critical Water Shortage Reduction Marketing Program. Programs such as the EWA and the Critical Water Shortage Reduction Marketing Program should result in beneficial effects, including increased instream flows in source areas and increased water levels in project-operated reservoirs. The specific frequency, magnitude, and timing of transfers within these programs are complex, however, and cannot be determined without undue speculation. All of these programs must satisfy strict environmental requirements, especially in the Delta, before water can be transferred.

AGREEMENTS, ORDERS, AND DECISIONS AFFECTING WATER OPERATIONS

Numerous agreements, orders, and decisions affect water operations in California. Those that are relevant to the proposed project can be reviewed in Sections 3.1.1 and 3.2.1, "Regulatory Setting," and are not reiterated herein.

4.1.3 PROJECTS CONTRIBUTING TO POTENTIAL CUMULATIVE IMPACTS

GEOGRAPHIC SCOPE

The geographic scope of the cumulative impacts analysis consists of New Bullards Bar and Englebright Reservoirs, the BVID service area, the Yuba River below New Bullards Bar and Englebright Reservoirs, the Feather River downstream of the Yuba River, the Sacramento River downstream of the Feather River, the Delta, and the CVP/SWP export service area as shown in Exhibit 2-1 in Chapter 2, "Project Description," in this EIR.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The effects of the actions described below were qualitatively considered in the assessment of the cumulative effects of the Proposed Project.

YCWA has undertaken transfers similar to the temporary transfers proposed under the BVID Multiyear Temporary Water Transfers Project. Each of the transfers was the subject of a separate environmental document prepared to meet SWRCB requirements; certain temporary transfers are exempt from CEQA. These past analyses and subsequent review of transfer effects (SWRI and Jones & Stokes 2003, cited in EDAW 2004; DWR, YCWA, and Reclamation, 2007) have not identified any substantial evidence of significant adverse or unreasonable environmental impacts. Populations of Yuba River Chinook salmon have continued to be maintained or increased over time, including during periods of water transfers. For example, the 2001–2004 Yuba River salmon spawning escapements were approximately 18,000–29,000 salmon in each year, well above the average annual escapement over the past 45 years. The 10-year period of escapement (1995–2004) is higher than any other 10-year period of Chinook salmon escapement on the Yuba River since data have been collected over the past 50 years.

Fisheries monitoring programs instituted in 2001 and 2002 to collect data regarding the effects of YCWA's transfer on fisheries found no conclusive evidence of impacts (SWRI and Jones & Stokes 2003, cited in EDAW 2004). Although much of the existing information is inconclusive, protections such as minimizing fluctuations during spawning periods and implementing ramping rates at the end of transfers have reduced the potential for unreasonable adverse effects on Yuba River fisheries, as has the Yuba Accord, which provides additional instream flow and other measures to protect and enhance Yuba River fisheries.

DWR's EWA involves acquiring approximately 200,000 af of water annually from various sources. It also allows the further curtailment of Delta pumping to reduce the entrainment of fish at the SWP Banks Pumping Plant to achieve benefits beyond the existing environmental baseline. Pumping could be increased to move water controlled by the EWA when substantial impacts on sensitive fish are not likely. However, the final pumping schedules would remain within the parameters of SWP operations permitted under the existing SWRCB *Delta Water Quality Control Plan.*

Numerous other entities transfer water from northern California, through the Delta, to central and southern California. Most water transfers would likely be exported through the Delta during summer and fall to maximize benefits to migrating winter-run Chinook salmon and minimize adverse effects on delta smelt and longfin smelt. The EWA and other water transfers are expected to make relatively small changes in the overall operations of the SWP and CVP facilities. Operational changes to the SWP and CVP can be generally characterized as shifts in pumping rates at the SWP and CVP Delta diversion pumps, shifts in storage and release patterns at SWP and CVP reservoirs, shifts in groundwater pumping in local areas, and shifts in surface water storage release patterns in local areas.

In 2004, the final EIR/EIS for the EWA was released. That document evaluated numerous transfer scenarios including transfers from the Yuba River to Delta users. The conclusion in the final EIR/EIS and by USFWS and NMFS was that the EWA was not likely to adversely affect delta smelt, Sacramento River winter-run Chinook salmon and critical habitat, Central Valley spring-run Chinook salmon, and Central Valley steelhead (Reclamation and DWR 2004, USFWS 2004, and NMFS 2003, all cited in EDAW 2004).

DWR is currently operating a drought water bank and has in the past operated similar programs to make water available to willing buyers downstream of the Delta from willing sellers upstream of the Delta. This water is transferred, using SWP or CVP facilities, to public and private water suppliers that are at risk of experiencing water shortages in the same year because of drought conditions and that require supplemental water supplies to meet anticipated demands that otherwise would be met with the unavailable portion of contractual supplies. The water bank uses the environmental protection measures and mitigation measures developed for the EWA to the extent they are applicable to ensure that transfers and related actions are in compliance with applicable provisions of the federal and California Endangered Species Acts and to prevent unreasonable environmental impacts. DWR water banking programs also are operated in accordance with all applicable laws, regulations, decisions, agreements, BOs, and court orders.

4.1.4 ANALYSIS OF CUMULATIVE IMPACTS

ANALYTICAL APPROACH

The analysis of cumulative impacts relies on the CALSIM II modeling performed for the hydrologic impacts section of this EIR (see Section 3.1, "Hydrology and Water Quality"). CALSIM II is a planning model designed to simulate the operations of the SWP and CVP reservoirs and water delivery system for current and future facilities, flood control criteria, water delivery policies, instream flow and Delta outflow requirements, and hydroelectric power generation. The CALSIM II model was used to analyze the hydrologic effects of the proposed 1-year water transfers and takes into account all water diversions that would cumulatively contribute to impacts resulting from water use in the SWP and CVP system. Based on this modeling, there would be virtually no effects from the proposed project on all resource topics except potentially hydrology, water quality, and biological resources. Consequently, none of the other resource topics would have a cumulatively considerable contribution to any cumulative significant impact. Therefore, only hydrology, water quality, and biological resources are evaluated below as they are the only resource topics with potentially significant cumulative effects.

HYDROLOGY AND WATER QUALITY

Flood Protection

Cumulatively with existing conditions transfers and anticipated future transfers, including transfers under the Yuba Accord, the proposed project would not change or modify flood control requirements at New Bullards Bar Reservoir. The proposed project would occur for a limited time in coordination with other transfers; would involve similar, very limited increases in streamflows in the lower Yuba, Feather, and Sacramento Rivers; and would cause similar minimal increases in those rivers' water levels well below flood stage levels relative to existing conditions involving past transfers. Therefore, the proposed project would not result in any measurable changes in river geomorphology or result in changes in flood frequency or extent of inundation along these rivers. The proposed project is not anticipated to make a considerable contribution to any cumulatively significant effect related to flood protection.

Groundwater and BVID Water Supplies

As described in Section 3.1, "Hydrology and Water Quality," the proposed project would involve the transfer of Conservation Water that BVID could make available through conservation measures without reducing its deliveries to its customers. The transfers would not involve groundwater substitution, and there is no indication from past transfers that any third-party impacts, such as increased groundwater pumping, would occur. In addition, BVID would still provide water to its service area without any reductions in supplies. Therefore, the proposed project is not anticipated to make a considerable contribution to any cumulatively significant effect related to impacts on groundwater or BVID's water supplies.

Surface Water Quality

Changes in reservoir operations and river flows brought about by the proposed project would be similar to existing conditions and would be very small relative to pre-project conditions. With implementation of the proposed project, minimum flow volumes would continue to be met in accordance with all applicable regulations, BOs, and court orders in effect at the time the transfer is made. As noted above, past analyses and subsequent review of water transfer effects have not identified any substantial evidence of significant adverse or unreasonable cumulative environmental impacts. As such, the proposed project is not anticipated to make a considerable contribution to any cumulatively significant adverse effect related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the Delta.

Delta Hydrology and Delta Exports

Any water transferred under the proposed project would be pumped or otherwise diverted from the Delta in a manner that is consistent with all applicable court orders, BOs, terms of water right permits and licenses, and other regulatory requirements in effect at the time the water is transferred. Water transfers would occur only when the Delta is in balanced conditions. A portion of each water transfer may be used for carriage water to ensure that there is no adverse effect on the ability of DWR to meet Delta water quality criteria. Moreover, additional flows in the watershed upstream of the Delta and in the Delta, and additional pumping to implement the proposed project, would occur within historical average flows and Delta pumping rates. Therefore, changes in Delta inflow and outflow would be similar to existing conditions. In addition, the maximum transfer of 3,100 af/yr would be small and have virtually no effect on water levels in the South Delta. Because of the plethora of applicable court orders, BOs, terms of water right permits and licenses, and other regulatory requirements, the temporary transfers from the proposed project would have virtually no effect on Delta hydrology and exports because they would not occur unless hydrological and regulatory conditions permit, including coordination with similar transfers to ensure that no cumulatively significant impacts would occur. Since BVID has already been transferring its Conservation Water through the Delta, the proposed project only continues the transfer flows into the Delta from

2010 – 2025. The proposed project, therefore, is not anticipated to make a considerable contribution to any cumulatively significant adverse effect related to changes in Delta hydrology and Delta exports.

BIOLOGICAL RESOURCES

The proposed project would not make a cumulatively considerable contribution to any cumulative significant impact on the decline of Delta fish species. Any Conservation Water transferred under the proposed project would be pumped or otherwise diverted from the Delta in a manner that is consistent with all applicable court orders, BOs, water-right permits and license terms, and other regulatory requirements described above to ensure that total river flows and Delta pumping rates would be within the permitted ranges deemed by applicable legal and regulatory requirements to be protective of affected fish species. Moreover, additional flows in the watershed upstream of the Delta and in the Delta and additional pumping to implement the proposed project would occur within historical average flows and Delta pumping rates. The decline in Delta species has occurred over a period of years and generally consists of declines in the number of fish of a particular species over a multiyear period due to a host of factors not connected to upstream reservoir release and river flow rates, including invasive species, past operations of the Delta pumps, salinity problems in the South Delta, and past addition of pollutants upstream and in the Delta. The decline in Delta species therefore bears little or no relationship to small, 1-year changes in water flows in Delta water channels or in Delta pumping by the SWP and CVP that would occur within all legal and regulatory constraints.

The proposed project would involve very small changes in Delta channel flows and Delta pumping by the SWP or CVP that would occur entirely within a limited time period. Because of the decline in Delta aquatic species, numerous measures have been implemented to protect them. In particular, the Smelt and Salmon BOs require that certain reasonable and prudent measures be implemented to protect delta smelt and several anadromous species. If the proposed project cannot be fully implemented in compliance with the various measures that have been put in place to protect Delta species, then the implementation of the proposed project would be restricted (i.e., less water would be pumped as transfer water) or would not occur at all in that particular year.

The proposed project would also not make a cumulatively considerable contribution to a significant cumulative effect on fisheries in the reservoirs, lower Yuba River, Feather River, or Sacramento River for the same reasons stated above. All aquatic species protection requirements of the Yuba Accord will be met. Additionally, terrestrial biological resources are unlikely to be affected by the proposed project because transfer operations occur in the water or on existing disturbed sites without any expansion of existing river carrying or pumping capacity. Any minor effects from temporary and slightly lower reservoir levels or temporary and slightly increased flow releases in the rivers would not result in any impacts because those effects would be temporary and would not accumulate over time to result in any potentially significant change to terrestrial or aquatic species or their habitat.

Therefore, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact on any biological resources.

4.2 GROWTH-INDUCING IMPACTS

4.2.1 REQUIREMENTS FOR ANALYSIS OF GROWTH-INDUCING IMPACTS

In accordance with Section 15126.2(d) of the State CEQA Guidelines, an EIR must discuss the growth-inducing impacts of the proposed project. Specifically, CEQA states that the EIR shall:

> Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service

> facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Growth-inducing impacts would result from a project that would directly or indirectly foster (promote or encourage) additional economic or population growth or construction of additional housing. Fostering of growth can occur when an obstacle to growth is removed, such as when expansion of infrastructure resolves growth-constraining capacity problems. The State CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this EIR, to reach the conclusion that a project is growth-inducing as defined by CEQA, the EIR must find that it would foster (i.e., promote or encourage) additional growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with Section 15126.2(d) of the State CEQA Guidelines.

If the analysis conducted for the EIR results in a determination that a project is growth-inducing, the next question is whether that growth may cause adverse effects on the environment. Environmental effects resulting from induced growth (i.e., growth-induced effects) fit the CEQA definition of "indirect" effects in Section 15358(a)(2) of the State CEQA Guidelines. These indirect or secondary effects of growth may result in significant environmental impacts. CEQA does not require that the EIR speculate unduly about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but a good-faith effort is required to disclose what is feasible to assess. Potential secondary effects of growth could include consequences—such as conversion of open space to developed uses, increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat—that are the result of the growth fostered by the project.

The decision to allow those projects that result from induced growth is the subject of separate decision making by the lead agency responsible for considering such projects. Because the decision to allow growth is subject to separate discretionary decision making, and such decision making itself is subject to CEQA, the analysis of growth-inducing effects is not intended to determine site-specific environmental impacts and specific mitigation for the potentially induced growth. Rather, the discussion is intended to disclose the potential for environmental effects to occur more generally, such that decision makers are aware that additional environmental effects are a possibility if growth-inducing projects are approved. The decision of whether impacts do occur, their extent, and the ability to mitigate them is appropriately left to consideration by the agency responsible for approving such projects, at such times as complete applications for development are submitted.

4.2.2 ANALYSIS OF GROWTH-INDUCING IMPACTS

BVID is proposing a multiyear series of short-term (1-year or less) temporary water transfers to DWR, Reclamation, or south-of-Delta contractors of the CVP or SWP. BVID would transfer up to 3,100 af per year of Conservation Water under its pre-1914 water right during the period 2010–2025. Through agreements between BVID as a willing seller and willing buyers under California law, the proposed series of temporary water transfers would maximize the utility of the Conservation Water to BVID and other water users. BVID intends to identify willing buyers downstream of its water service area each year that could take delivery of the Conservation Water. BVID would execute new transfer agreements each year and would not execute any agreements to provide a long-term water supply to any entity under this project.

As shown in Table 3.1-2, BVID has historically transferred water sporadically and to a number of willing buyers. This pattern of transfer is expected to continue under the proposed project. Growth cannot occur based on a limited 1-year water supply like that involved in past BVID transfers or under the proposed project. Under

California Law, growth can only occur with a reliable, long-term supply, which the proposed project would not provide. (See Planning and Conservation League v. Dept. of Water Resources (2000) 83 Cal.App.4th 892; Vineyard Area citizens For Responsible Growth, Inc. v. City of Rancho Cordova (2007) 40 Cal.4th 412.) For this reason, the proposed project would not be capable of inducing growth in areas that would receive water as part of the proposed project. The proposed project instead would assist in addressing shortages in water supplies caused by statewide drought conditions, such as the current drought emergency declared by Governor Schwarzenegger in his February 27, 2009 drought emergency declaration.

4.3 SIGNIFICANT AND IRREVERSIBLE COMMITMENT OF RESOURCES

CEQA Section 21100(b)(2) provides that an EIR shall include a detailed statement setting forth "[i]n a separate section…[a]ny significant effect on the environment that would be irreversible if the project is implemented." Section 15126.2(c) of the State CEQA Guidelines provides the following guidelines for analyzing the significant irreversible environmental changes of a project:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements which provide access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. The proposed project would not involve conversion of agricultural or wild lands to urban uses, the demolition of structures or the construction of new facilities, nor would it use construction materials such as concrete, wood, steel, or glass. In any year in which BVID transferred Conservation Water, the proposed project would result in the irreversible and irretrievable commitment of energy expended in the form of electricity that would be needed to pump the transferred water out of the Delta for delivery to the receiving entity. Because the Delta pumps currently are utilized at permitted capacity in years when maximum contractual supplies are available from the SWP and CVP, BVID and other parties have, in drier years, completed numerous water transfers of similar volume that require the same amount in energy to pump water from the Delta, the proposed project is not expected to result in any irretrievable increase in the energy expended. In addition, in years when BVID would be able to transfer Conservation Water under the proposed project, the consumption of electricity to pump such water would be justified because the transfers would help relieve water supply shortages downstream of the Delta that otherwise could cause significant public health and safety and economic impacts.

4.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 21100(b)(2)(A) of CEQA provides that an EIR shall include a detailed statement setting forth "[i]n a separate section…[a]ny significant effect on the environment that cannot be avoided if the project is implemented." As required by Section 15126.2(b) of the State CEQA Guidelines, an EIR must describe any significant impacts that cannot be avoided, including those that can be mitigated but not reduced to a less-than-significant level. In addition, Section 15093(a) of the State CEQA Guidelines allows the decision-making agency to determine whether the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. The lead agency can approve a project with unavoidable adverse impacts if it prepares a "statement of overriding considerations" setting forth the specific reasons for making such a judgment.

Based on the environmental analysis provided in Chapter 3 of this EIR, no significant unavoidable impacts are identified for the proposed project.

5 ALTERNATIVES ANALYSIS

5.1 REQUIREMENTS UNDER CEQA

The State CEQA Guidelines require that EIRs "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (Section 15126.6[a]). The purpose of the alternatives analysis is to determine whether or not a variation of the proposed project or an alternative would reduce or eliminate any significant project impacts in the basic framework of the project's objectives. The alternatives analysis should also discuss the comparative merits of the alternatives. The range of alternatives is governed by the "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice" (Section 15126.6[f]). The choice of alternatives shall be "limited to ones that would avoid or substantially lessen any of the significant effects" of implementing the proposed project (Section 15126.6[f]). CEQA further provides that an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Section 15126.6[f][3]). In addition to the principles for the selection of alternatives described above, CEQA further requires that an EIR identify alternatives that were initially considered but then rejected from further consideration (Section 15126[c]) as well as identify the "environmentally superior" alternative (Section 15126[e]).

CEQA states that, among other alternatives, a "no project" alternative shall be evaluated in relation to the proposed project (State CEQA Guidelines, Section 15126.6[e]). Moreover, the "no project" analysis must "discuss the existing conditions at the time…the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (State CEQA Guidelines, Section 15126.6[e]).

5.2 SIGNIFICANT IMPACTS OF THE PROPOSED PROJECT

Chapter 3, "Environmental Impact Analysis," provides a complete analysis of the proposed project. As identified in Table ES-1, "Summary of Impacts and Mitigation Measures," in the executive summary and in the individual impact analyses provided for each resource topic in Chapter 3, implementation of the proposed project would not result in significant impacts on biological resources or on hydrology and water quality. As described in Section 1.3, "Scope of the Environmental Analysis," and Appendix A, "Environmental Checklist," BVID determined that the proposed project would not have the potential to result in significant impacts on any other resource topics, and these other resource topics were eliminated from detailed consideration in this EIR.

5.3 ALTERNATIVES ANALYSIS

As described in Chapter 2, "Project Description," the objective of the proposed project is to maximize the utility of Conservation Water to BVID and other water users. As described in Chapter 1, "Introduction," BVID provided opportunities for public and agency involvement in the EIR scoping process before preparing the EIR. In addition to the proposed project evaluated in Chapter 3, this EIR also considers the No-Project Alternative and three additional action alternatives.

The project alternatives involve transferring Conservation Water to several different potential water users or the use of Conservation Water within BVID. The alternatives differ primarily by location of the potential recipient and by point of diversion. The point of diversion can influence how frequently the transfer may occur. For example, the Conservation Water can be used within BVID or transferred to a water user north of the Delta every year, while transfers south of the Delta are limited in some years by Delta conditions. Changes in the pattern of reservoir operations and river flows as a result of the proposed multiyear temporary 1-year transfers from 2010 through 2025 would be similar to the existing conditions because past 1-year transfers of the Conservation Water

to south-of-Delta water contractors are part of the existing conditions. Most of the differences between the existing condition and the project alternatives relate to operational changes resulting from changes in the point of diversion for the Conservation Water. Therefore, the comparison of alternatives to existing conditions in the following analysis, also provides a comparison with the proposed project.

Additionally, under the alternatives, water operations would be affected by changes in the timing of proposed transfers of Conservation Water. Two timing options are available. One option involves temporarily storing Conservation Water in New Bullards Bar Reservoir as it is conserved, then releasing the entire 3,100 af for transfer over a 2-week period. Under the second option, Conservation Water would not have to be temporarily stored in New Bullards Bar; instead the water would be released from New Bullards Bar and diverted downstream on the same pattern it is conserved. These changes in the timing of the transfer also create differences between the existing condition and the project alternatives.

Each alternative is described below and a qualitative analysis is provided for each environmental issue area evaluated in this EIR. The analysis is comparative, identifying whether the alternative would result in a "greater," "lesser," or "similar" impact relative to the proposed project. The determination is shown in brackets at the end of the impact discussion for each environmental issue analyzed. Because there was virtually no effect from the proposed project on other resource topics, it was not necessary to evaluate the effects the alternatives below would have on those resource topics. The rationale in evaluating alternatives is to determine whether alternatives can reduce environmental impacts; in the case of the other resource topics, the impacts are so minor that none of the alternatives could substantially reduce the environmental impacts resulting from the proposed project.

5.3.1 ALTERNATIVE 1: NO PROJECT

DESCRIPTION

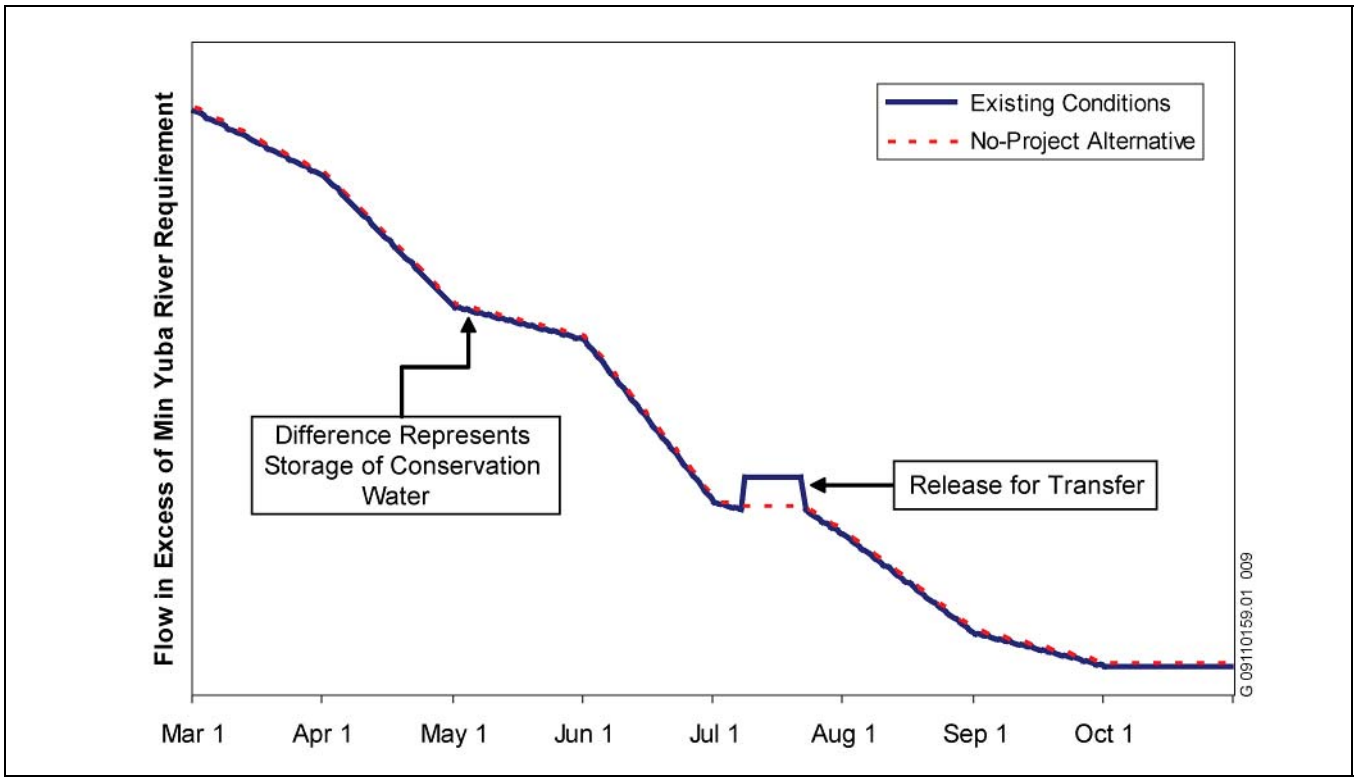
Under the No-Project Alternative, BVID would not identify or execute temporary transfer agreements each year with willing buyers that could take delivery of the Conservation Water. If BVID does not use the Conservation Water, the Conservation Water would become uncommitted water that YCWA would control. YCWA could store or release the water on a different schedule depending on YCWA operational needs, Yuba Accord constraints, and other considerations.

ENVIRONMENTAL IMPACTS

Hydrology and Surface Water Quality

Under this alternative, a portion of the Conservation Water could be used by BVID to satisfy existing irrigation demands within its Yuba River service area. BVID would divert the Conservation Water on an irrigation-season pattern (as it is conserved) at its Pumpline Canal intake below the confluence with Dry Creek. Conservation Water may replace water normally provided to BVID under its contract with YCWA, thereby reducing its use of YCWA-contract water. Under the No-Project Alternative, the quantity of water diverted at the Pumpline Canal would be the same as under existing conditions, but the water would be accounted for differently.

Under the No-Project Alternative, any Conservation Water not used by BVID would either be: (1) stored in dry years in New Bullards Bar Reservoir for later release on a pattern different than that proposed for the project; or (2) allowed in wet years to flow through New Bullards Bar and Englebright Reservoirs and released down the lower Yuba River to meet YCWA's operational needs. The second scenario typically would occur in wet year types when releases from New Bullards Bar Reservoir would provide flow in excess of minimum downstream requirements. This situation would result in a change in releases from New Bullards Bar Reservoir relative to existing conditions, under which Conservation Water is stored for future release on a water transfer pattern. Exhibit 5-1 illustrates how flows in excess of the minimum Yuba River requirement might change under these two different conditions.



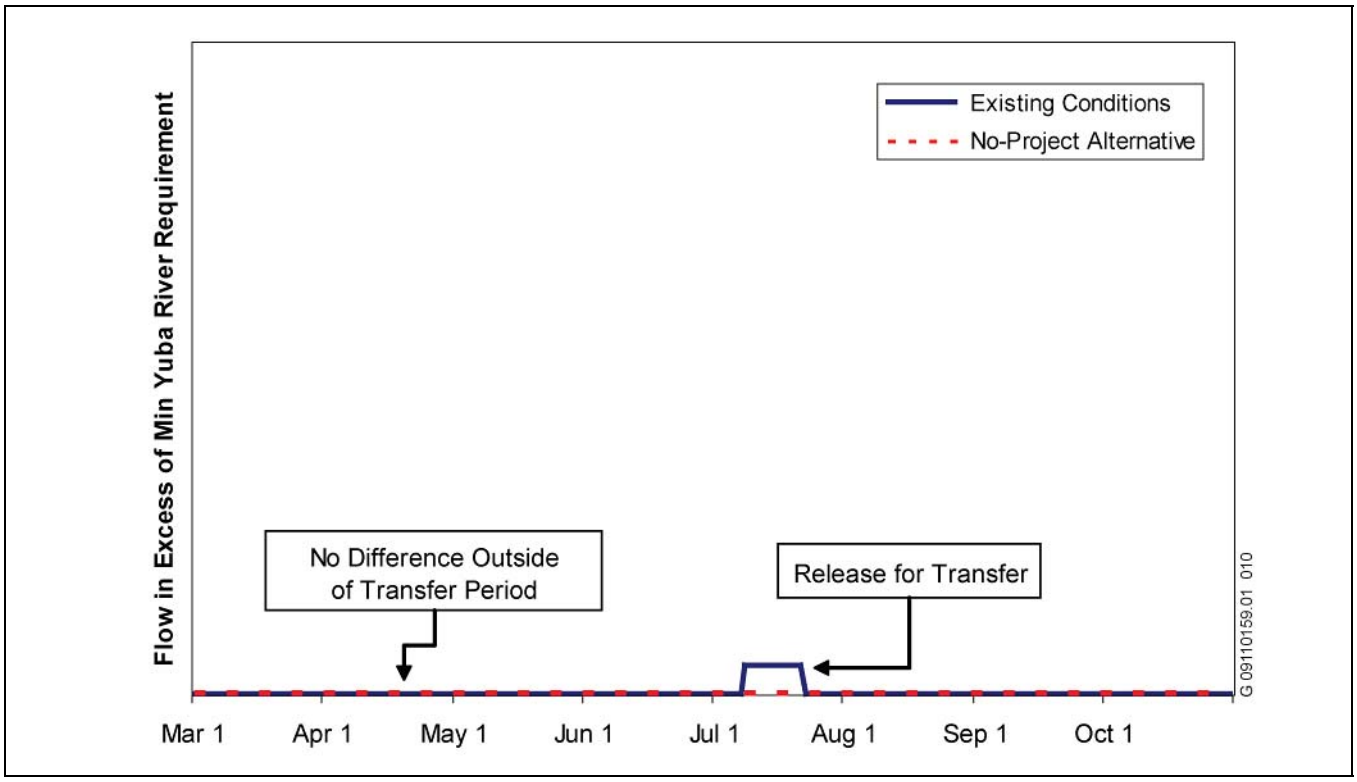
Source: MBK Engineers 2009.

Flow in Excess of Minimum Yuba River Requirements under Existing Conditions and the No-Project Alternative in Wet Year Types **Exhibit 5-1**

Under the first scenario for the No-Project Alternative, in dry year types when releases from New Bullards Bar are controlled by minimum Yuba River flow requirements, YCWA may store Conservation Water in New Bullards Bar Reservoir and use or spill it in future months. This would reduce releases relative to existing conditions in months when transfers occur and may increase releases in future months. Exhibit 5-2 illustrates changes in Yuba River flows in excess of the minimum requirements under these conditions.

Differences in releases from New Bullards Bar Reservoir would represent only a small percentage of releases under existing conditions. The largest percentage difference would occur in January because surplus releases in drier year types under the No-Project Alternative could increase by as much as 3,100 af during January if Conservation Water is stored in New Bullards Bar Reservoir and then spills. The changed flows would typically represent a smaller percentage of flows, moving farther downstream. Changes in releases at New Bullards Bar Reservoir would flow through Englebright Reservoir without affecting Englebright storage. In critical dry-year types, the No-Project Alternative may reduce Yuba River flows at Marysville by approximately 12% in July relative to existing conditions. These changes are described in detail in Appendix C, pages 17-24, *Water Resources Analysis,* MBK Engineers (2009).

The No-Project Alternative would result in only minor changes, relative to existing conditions, in reservoir storage, reservoir releases, and downstream flow on the Yuba, Feather, and Sacramento Rivers. These changes would remain within minimum instream flow requirements. Because changes in reservoir operations and river flows would be very small, it is not anticipated that any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the Delta would occur as a result of the No-Project Alternative. The No-Project Alternative would not result in violations of minimum instream flow requirements, alterations of high-flow conditions



Source: MBK Engineers 2009.

Flow in Excess of Minimum Yuba River Requirements under Existing Conditions and the No-Project Alternative in Drier Year Types **Exhibit 5-2**

causing impairment of geomorphic processes or fish passage, or changes in water quality preventing water quality standards from being met or beneficial uses from being supported. Therefore, this alternative would result in less-than-significant impacts related to hydrology and water quality ***(Similar).***

Biological Resources

In wet years, implementation of the No-Project Alternative would result in the release of Conservation Water from New Bullards Bar and Englebright Reservoirs down the Yuba River in excess of existing minimum flow requirements. The additional small increment of Conservation Water (3,100 af) may be released at the rate at which it is conserved, spreading out the increased flow over a period of 8 months. This release pattern would not result in changes to aquatic habitats or the native fish community, including special-status fish species in the study area. There is no evidence that this small effect on reservoir volume or flows in the Yuba, Feather, and Sacramento Rivers and the Delta would have a significant impact on any species reliant on those water bodies because the releases would involve very limited changes in flows, and would cause minimal changes in water levels. These changes in hydrologic conditions, which are described in detail in Appendix C, pages 17-24, *Water Resources Analysis,* MBK Engineers (2009), would not result in a discernible change in aquatic habitats. Therefore, this alternative would result in less-than-significant impacts related to biological resources ***(Similar).***

5.3.2 ALTERNATIVE 2: BVID YUBA RIVER SERVICE AREA EXPANSION

DESCRIPTION

Alternative 2 is similar to the No-Project Alternative, except that BVID would expand water service to the *Spring Valley Specific Plan* (SVSP) area using the Conservation Water to help satisfy additional demands created by

buildout of the SVSP. The SVSP, which is located within BVID's Yuba River service area, was approved by the Yuba County Board of Supervisors in 1992 and is currently being entitled. When completely built out, the SVSP would include approximately 3,500 dwelling units and a 220-acre golf course on 2,500 acres. The estimated water demand for the SVSP project at buildout would be approximately 4,000 afy (Yuba County 1992:20 and 71). Policies in the specific plan require that housing use water conservation features and drought-tolerant landscaping (Yuba County 1991:H-3).

ENVIRONMENTAL IMPACTS

Hydrology and Surface Water Quality

Under this alternative, the Conservation Water would be contractually committed to serve the SVSP area and would not be released down the lower Yuba River in any year. Increased diversion at the Pumpline Canal would change operations at New Bullards Bar Reservoir relative to existing conditions. Under existing conditions, Conservation Water is temporarily stored in New Bullards Bar Reservoir for transfer when Delta conditions permit. Under this alternative, Conservation Water would not be stored but would pass through New Bullards Bar Reservoir for diversion by BVID at a new diversion constructed adjacent to its existing Pumpline Canal diversion facilities. Changes in releases from New Bullards Bar Reservoir would be within approximately 2% of the release under existing conditions (MBK 2009: 25).

Changes in releases at New Bullards Bar Reservoir would flow through Englebright Reservoir without affecting Englebright Reservoir storage. In critical dry year types, Alternative 2, like the No-Project Alternative, may reduce Yuba River flows at Marysville by approximately 12% in July compared to existing conditions. These altered flows would continue downstream into the Delta; however, below the Yuba River, the flow reductions would represent a decreasing percentage of existing flows. These changes are described in detail in Appendix C, pages 24-30, *Water Resources Analysis*, MBK Engineers (2009).

Alternative 2 would result in only minor changes, relative to existing conditions, in reservoir storage, reservoir releases, and downstream flow on the Yuba, Feather, and Sacramento Rivers. Minimum instream flow requirements would continue to be met. Because changes in reservoir operations and river flows would be very small, it is not anticipated that any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the Delta would occur as a result of this alternative. Alternative 2 would not result in violations of minimum instream flow requirements, alterations of high-flow conditions causing impairment of geomorphic processes or fish passage, or changes in water quality preventing water quality standards from being met or beneficial uses from being supported. Therefore, this alternative would result in less-than-significant impacts related to hydrology and water quality ***(Similar)***.

Biological Resources

In dry years, releases from New Bullards Bar and Englebright Reservoirs under Alternative 2 would increase slightly (by 1%) in April and May and decrease slightly (by 2%) in July and August. These altered flows would continue downstream into the Delta; however, below the Yuba River, the increase and reduction in flows would represent a smaller percentage of existing flows. This release pattern would not result in changes to aquatic habitats or the native fish community, including special-status fish species in the study area. There is no evidence that this small effect on reservoir volume or flows in the Yuba, Feather, and Sacramento Rivers and the Delta would have a significant impact on any species reliant on those water bodies because the releases would involve very limited changes in flows, and would cause minimal changes in water levels. These changes in hydrologic conditions, which are described in detail in Appendix C, pages 24-30, *Water Resources Analysis*, MBK Engineers (2009), would not result in a discernible change in aquatic habitats. Therefore, this alternative would result in less-than-significant impacts related to biological resources ***(Similar)***.

5.3.3 ALTERNATIVE 3: NORTH-OF-DELTA IRRIGATION SEASON TRANSFER

DESCRIPTION

Under Alternative 3, BVID would enter into temporary water supply transfer agreements each year with a transferee whose point of diversion is located between Marysville on the Yuba River and the Sacramento River at Hood. Potential transferees include the Freeport Regional Water Authority (FRWA), Davis-Woodland Water Supply Project Authority (DWWSPA), East Bay Municipal Utility District (EBMUD), or Sacramento County Water Agency (SCWA).

Under this alternative, BVID would provide the 3,100 af of Conservation Water on an irrigation season pattern, as it is conserved. The water would flow from the historical point of diversion on the North Yuba River, through the Yuba River, and past Marysville. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

ENVIRONMENTAL IMPACTS

Hydrology and Surface Water Quality

Increased diversions between Marysville on the Yuba River and Hood on the Sacramento River could change operations at New Bullards Bar Reservoir relative to existing conditions. Under existing conditions, Conservation Water is stored temporarily in New Bullards Bar Reservoir for transfer when Delta conditions permit. Under this alternative, Conservation Water would not be stored but would pass through New Bullards Bar at the rate it is conserved for diversion downstream. Under Alternative 3, the largest changes in releases would typically occur in January in a dry year when releases would increase by 8% over releases during existing conditions for that month. Similar but slightly smaller changes would occur with the releases from Englebright Reservoir. These changes are described in detail in Appendix C, pages 30-32, *Water Resources Analysis,* MBK Engineers (2009).

Releases from New Bullards Bar Reservoir would flow through Englebright Reservoir without affecting Englebright Reservoir storage. In critical dry year types, Alternative 3, like the No-Project Alternative, may reduce Yuba River flows at Marysville by approximately 12% in July compared to existing conditions. These altered flows would continue downstream into the Delta; however, below the Yuba River the reduction in flows would represent a decreasing percentage of existing flows. These changes are described in detail in Appendix C, pages 32-36, *Water Resources Analysis,* MBK Engineers (2009).

Alternative 3 would result in only minor changes, relative to existing conditions, in reservoir storage; reservoir releases; and downstream flows on the Yuba, Feather, and Sacramento Rivers. Minimum instream flow requirements, therefore, would continue to be met. Because changes in reservoir operations and river flows would be very small, it is not anticipated that any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the Delta would occur as a result of this alternative. Alternative 3 would not result in violations of minimum instream flow requirements, alterations of high-flow conditions causing impairment of geomorphic processes or fish passage, or changes in water quality preventing water quality standards from being met or beneficial uses from being supported. Therefore, this alternative would result in less-than-significant impacts related to hydrology and water quality ***(Similar)***.

Biological Resources

In most water year types under Alternative 3, releases from New Bullards Bar and Englebright Reservoirs would typically increase slightly (by 1 to 8%) in January and decrease slightly (by 1 to 3%) in July and August, relative to existing conditions. These flow changes would continue downstream into the Delta; however, below the Yuba

River, this increase and reduction in flows would represent a decreasing percentage of existing flows. This release pattern would not result in changes to aquatic habitats or the native fish community, including special-status fish species in the study area. There is no evidence that this small effect on reservoir volume or flows in the Yuba, Feather, and Sacramento Rivers and the Delta would have a significant impact on any species reliant on those water bodies because the releases would involve very limited changes in flows, and would cause minimal changes in water levels. These changes in hydrologic conditions, which are described in detail in Appendix C, pages 30-36, *Water Resources Analysis,* MBK Engineers (2009), would not result in a discernible change in aquatic habitats. Therefore, this alternative would result in less-than-significant impacts related to biological resources ***(Similar)***.

5.3.4 ALTERNATIVE 4: NORTH-OF-DELTA TRANSFER – TWO-WEEK DELIVERY SCHEDULE

DESCRIPTION

Under Alternative 4, BVID would enter into temporary short-term transfer agreements each year with FRWA, EBMUD, DWWSPA, or SCWA to transfer 3,100 afy of Conservation Water to their respective service areas. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

This alternative assumes that BVID would provide the 3,100 af of Conservation Water over a period of 2 weeks between July 1 and October 31 of each year. The Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season, and released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba Accord. The Conservation Water would flow through Englebright Reservoir and down the lower Yuba River to the transferees' point of diversion.

ENVIRONMENTAL IMPACTS

Hydrology and Surface Water Quality

In many years, operations under Alternative 4 would be similar to operations under existing conditions. However, Alternative 4 is not dependent on balanced conditions in the Delta or on available export capacity, so transfers could occur every year. It was assumed for this analysis that these transfers would occur every year in July. Changes in reservoir operations and flows would be similar in magnitude if the transfers under Alternative 4 where to occur in a different month between July and October.

Under Alternative 4, the largest changes in releases from New Bullards Bar Reservoir would occur in July, with a 4% increase in July of a critical dry year. The largest decrease in releases would occur in August, with a 2% decrease in drier years. Changed flows released from New Bullards Bar Reservoir would flow through Englebright Reservoir without affecting Englebright Reservoir storage. In drier water year types, Alternative 4 may increase Yuba River flows at Marysville by 5 to 7% in July and decrease Yuba River flows by 2 to 6% in August, compared to existing conditions. These altered flows would continue downstream into the Delta; however, below the Yuba River this increase and reduction in flows would represent a small percentage of existing flows. These changes are described in detail in Appendix C, pages 36-41, *Water Resources Analysis,* MBK Engineers (2009).

Alternative 4 would result in only minor changes, relative to existing conditions, in reservoir storage and reservoir releases; and downstream flow on the Yuba, Feather, and Sacramento Rivers; therefore, minimum instream flow requirements would continue to be met. Because changes in reservoir operations and river flows would be very small, it is not anticipated that any measurable adverse effects related to changes in temperature, dissolved oxygen, dissolved solids, or other water quality constituents in the reservoir, rivers, or other locales such as the

Delta would occur as a result of this alternative. Alternative 4 would not result in violations of minimum instream flow requirements, alterations of high-flow conditions, impairment of geomorphic processes or fish passage, or changes in water quality preventing water quality standards from being met or beneficial uses from being supported. Therefore, this alternative would result in less-than-significant impacts related to hydrology and water quality ***(Similar)***.

Biological Resources

In most water year types under Alternative 4, releases from New Bullards Bar and Englebright Reservoirs would typically increase slightly (by 1 to 4%) in July because it is assumed that transfer of the Conservation Water would occur during July each year. In August of all year types the releases under Alternative 4 would typically decrease slightly (by 1 to 2%) relative to existing conditions because under existing conditions, transfers through the Delta also occur in August. The altered flows would continue downstream into the Delta. However, below the Yuba River, the increase and reduction in flows would represent a decreasing percentage of existing flows. This release pattern would not result in changes to aquatic habitats or the native fish community, including special-status fish species in the study area. There is no evidence that this minor effect on reservoir volume or flows in the Yuba, Feather, and Sacramento Rivers and the Delta would have any discernible impact on any species reliant on those water bodies because the releases would involve very limited changes in flows, and would cause minimal changes in water levels. These changes in hydrologic conditions, which are described in detail in Appendix C, pages 36-41, *Water Resources Analysis*, MBK Engineers (2009), would not result in a discernible change in aquatic habitats. Therefore, this alternative would result in less-than-significant impacts related to biological resources ***(Similar)***.

5.4 ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION

No other alternatives were considered during the planning process for this project.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The State CEQA Guidelines require identification of an environmentally superior alternative. If the No-Project Alternative is environmentally superior, CEQA requires selection of the "environmentally superior alternative other than the no project alternative" from among the project and the alternatives evaluated.

None of the alternatives would result in creation of significant impacts or significant unavoidable impacts on the environment. This analysis assumes that the alternative that would result in the least change in hydrologic conditions (reservoir storage, releases, and downstream flow conditions), when compared to existing conditions, would have the least impact on the environment. Therefore, the Proposed Project would be considered the environmentally superior project, because it is the most similar to existing conditions.

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APPENDIX A

Environmental Checklist

AESTHETICS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**Aesthetics. Would the project:**				
	a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
	b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
	c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
	d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

DISCUSSION

The Conservation Water would flow down the Yuba River, Feather River, and Sacramento River through the Delta in excess of minimum flow requirements, but would be relatively small in comparison to the water generally flowing in those water bodies and within the range of historic and permitted flows. The increased volume resulting from Conservation Water releases would have a less-than-significant impact on aesthetics resources because it would not be readily discernible to viewers under all but the lowest flow conditions on the lower Yuba River. During such low-flow conditions, the additional water releases would have a beneficial effect on aesthetics. The minor amount of water released from New Bullards Bar Reservoir would also have less-than-significant impact on aesthetics at New Bullards Bar Reservoir. No construction or other actions are proposed that could affect river morphology or riparian habitat, or that could otherwise affect existing aesthetics. Impacts would be less than significant.

AGRICULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II.	**Agricultural Resources.**				
	In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.				
	Would the project:				
	a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
	b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
	c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒

DISCUSSION

The proposed water transfers would not involve any construction that would affect agricultural resources. BVID would transfer Conservation Water only when it has sufficient supplies to also make full deliveries to its Yuba River service area that relies on the water right involved in the proposed project. Pumping of the Conservation Water by DWR or Reclamation would be subject to all past and future decisions and orders of the State Water Resources Control Board, court orders concerning the Delta and operation of the CVP and SWP export facilities, and applicable biological opinions affecting CVP and SWP operations. It also is possible that an agricultural water user south of the Delta may purchase the Conservation Water in one or more years during the proposed project period to permit irrigation of lands that otherwise would be fallowed because of a water shortage due to cutbacks in CVP supplies. Therefore, the proposed project is not expected to cause or contribute to any land fallowing. Because the proposed project would not involve land fallowing, it would not contribute to any cumulative effects attributable to land fallowing that may be involved in other water transfers that may be proposed by other Sacramento Valley water users. Similarly, the project is not located on agricultural land and would not result in any conversion of farmland to non-agricultural use, or conflict with existing agricultural zoning or a Williamson Act contract. No impact would occur.

AIR QUALITY

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III.	**Air Quality.**				
	Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
	Would the project:				
	a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
	b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
	c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
	d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
	e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

DISCUSSION

The proposed project does not involve any ground-disturbing activities; transport of hazardous materials; or use of heavy equipment or diesel-powered groundwater pumps that would generate emissions of air pollutants, including greenhouse gases. Also, the expected increase in flows and pumping rates would be minor and within historical average rates for the affected water bodies and facilities. Therefore, effects on air quality, including any project-specific or cumulative effects from increases in greenhouse gas emissions, are not expected, and no impacts related to objectionable odors would result from the project. In addition, because of the short-term duration of the proposed transfers, no significant project effects on climate change would occur. Impacts would be less than significant.

BIOLOGICAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**Biological Resources. Would the project:**				
	a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☐	☒	☐
	b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☐	☒	☐
	c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
	d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
	e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
	f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

DISCUSSION

Refer to Section 3.2 of the Multiyear Temporary Water Transfers Draft EIR for discussion of potential biological resources impacts of the proposed project.

CULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V.	**Cultural Resources. Would the project:**				
	a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
	b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☐	☒
	c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
	d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

DISCUSSION

The proposed project does not involve any ground-disturbing activities and no buildings or structures would be affected. No new areas would be inundated with water that have not otherwise been inundated under flows occurring during each season of the water year under existing conditions. Therefore, the proposed project would not affect cultural resources. No impact would occur.

GEOLOGY AND SOILS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	**Geology and Soils. Would the project:**				
	a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☐	☒
	ii) Strong seismic ground shaking?	☐	☐	☐	☒
	iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
	iv) Landslides?	☐	☐	☐	☒
	b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
	c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
	d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	☐	☐	☐	☒
	e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

DISCUSSION

The proposed project does not involve any ground-disturbing activities, and the temporary and short-term increase in flows is not expected to affect river geomorphology because the volume of Conservation Water that would be introduced in excess of minimum flow requirements would be within historical average rates for the affected water bodies, similar to flows under the existing conditions, and is too small of a quantity of water to significantly affect geology, soils, and river geomorphology. Therefore, the impact would be less than significant.

HAZARDS AND HAZARDOUS MATERIALS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII.	**Hazards and Hazardous Materials. Would the project:**				
	a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
	b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
	c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
	d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
	e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
	f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
	g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
	h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

DISCUSSION

The proposed project does not involve the use or transport of hazardous materials, and Conservation Water would not be transferred during times when flows could result in flooding. The increase in flows resulting from the transfer of Conservation Water would also be small relative to existing reservoir and river levels, and is not expected to increase boating, which could indirectly lead to the introduction of increased fuels, oils, and other contaminants into the water. Impacts would be less than significant.

HYDROLOGY AND WATER QUALITY

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII.	**Hydrology and Water Quality. Would the project:**				
	a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
	b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
	c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	☐	☐	☒	☐
	d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	☐	☐	☒	☐
	e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
	f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
	g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
	h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
	i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
	j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

DISCUSSION

Refer to Section 3.1 of the Multiyear Temporary Water Transfers Draft EIR for discussion of potential hydrology and water quality impacts of the proposed project.

LAND USE AND PLANNING

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX.	**Land Use and Planning. Would the project:**				
	a) Physically divide an established community?	☐	☐	☐	☒
	b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
	c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

DISCUSSION

The Conservation Water would be transferred only when BVID has sufficient water supplies to serve all demands within its Yuba River service area. BVID would not implement any multiyear transfer agreements. Transfers of Conservation Water therefore would be limited to multiple 1-year transfers, which could not be relied upon as long-term sources of water and would not support new development. Further, the proposed transfer of Conservation Water would not conflict with any land use plan or policies, habitat conservation plan, or natural community conservation plan. No impact would occur.

MINERAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	**Mineral Resources. Would the project:**				
	a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
	b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

DISCUSSION

The proposed project would not involve construction or activities that would affect mineral resources. No impact would occur.

NOISE

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI.	**Noise. Would the project result in:**				
	a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☐	☒
	b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
	c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
	d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
	e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
	f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

DISCUSSION

The proposed project does not involve any construction, modification of existing equipment, or installation or use of new equipment that would generate noise. Therefore, no impact would occur.

POPULATION AND HOUSING

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.	**Population and Housing. Would the project:**				
	a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
	b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
	c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

DISCUSSION

BVID would transfer Conservation Water only when it has sufficient water supplies to serve all demands within its Yuba River service area. BVID would not sign any multiyear transfer agreements. Therefore, an end user of the Conservation Water could not rely on it from year to year as a potential water supply to support growth. Project implementation would not involve construction, and no new employees are required. Therefore, the proposed project would not affect population or housing in the project study area. No impact would occur.

PUBLIC SERVICES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII.	**Public Services. Would the project:**				
	a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☐	☒
	Police protection?	☐	☐	☐	☒
	Schools?	☐	☐	☐	☒
	Parks?	☐	☐	☐	☒
	Other public facilities?	☐	☐	☐	☒

DISCUSSION

No effects on public services (e.g., waste disposal, emergency services, schools, parks) are expected to result from activities associated with the proposed project. No road closures would be required and therefore, no interruptions to emergency access would occur. In addition, no public utilities or infrastructure would be affected and no additional demands on public services would occur because the proposed transfer water would be used to replace water that is normally available within a buyer's service area. The incremental increase in flows resulting from the water transfer would be minor and within the range of historical operations, which would not impact recreational facilities or require any increase in the demand for public safety services. No impact would occur.

RECREATION

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV.	**Recreation. Would the project:**				
	a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
	b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

DISCUSSION

The proposed project does not include construction or expansion of recreational facilities, and would not significantly increase the use of existing recreational facilities or increase boating activities on New Bullards Bar Reservoir, Englebright Reservoir, any rivers affected by the project, or within the Delta because the amount of Conservation Water would not be sufficient to substantially increase water levels in those water bodies. Impacts would be less than significant.

TRANSPORTATION/TRAFFIC

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV.	**Transportation/Traffic. Would the project:**				
	a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☒
	b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
	c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
	d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
	e) Result in inadequate emergency access?	☐	☐	☐	☒
	f) Result in inadequate parking capacity?	☐	☐	☐	☒
	g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

DISCUSSION

The proposed project would not involve any construction, nor would it involve any additional vehicle trips associated with employees that operate the facilities through which Conservation Water would be conveyed. Therefore, no changes to the levels of service on local or regional roadways or effects on emergency access or parking capacity would occur. No impact would occur.

UTILITIES AND SERVICE SYSTEMS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI.	**Utilities and Service Systems. Would the project:**				
	a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
	b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
	c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
	d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
	e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	☐	☐	☐	☒
	f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
	g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

DISCUSSION

No effects on public services (e.g., waste disposal, emergency services, schools, etc.) are expected to result from activities associated with the proposed project. No road closures would be required and therefore, no interruptions to emergency access would occur. In addition, no public utilities or infrastructure would be affected and no additional demands on public services would occur, because the proposed transfer water would be used to replace water that is normally available within a buyer's service area. The incremental increase in flows resulting from the water transfer would be minor and within the range of historical operations, which would not impact recreational facilities or require any increase in the demand for public safety services. No impact would occur.

APPENDIX B

NOP Mailing List, Notice of Preparation, NOP Comment and Response

APPENDIX B1

NOP Mailing List

Mr. Dan Flory, Chief
State Water Project Analysis Office
Department of Water Resources
Post Office Box 942836
Sacramento, CA 94236-0001

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812

Butte Environmental Council
116 W. Second Street, Suite 3
Chico, CA 95928

U.S. Bureau of Reclamation
Mid-Pacific Region
MP150
Attn: Mr. Doug Kleinsmith
2800 Cottage Way
Sacramento, CA 95825-1898

Steve Grinnell
169 Mill Street
Cranston, RI 02905

David Hu, Habitat Restoration Coord.
U.S. Fish and Wildlife Service
Anadromous Fish Restoration Program
4001 N. Wilson Way
Stockton, CA 95205

Duane Massa
Department of Fish and Game
Yuba River Fishery Programs
2545 Zanella Way, Suite F
Chico, CA 95928

Maria Rea
National Marine Fisheries Service
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814

Curt Aikens
Yuba County Water Agency
1402 D Street
Marysville, CA 95901

James Navicky
Department of Fish and Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

Greg Meamber
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Joan Maher, P.E.
Imported Water Program Manager
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Alameda County Clerk Recorder's Office
1106 Madison Street
Oakland, CA 94607

Amador County Clerk
810 Court Street
Jackson, CA 95642

Butte County Clerk
Recorder's Office
25 County Center Drive
Oroville, CA 95965

Calaveras County Clerk-Recorder
Government Center
891 Mountain Ranch Road
San Andreas, CA 95249

Colusa County Clerk
546 Jay Street, Suite 200
Colusa, CA 95932

Contra Costa County Clerk
555 Escobar Street
Martinez, CA 94553

El Dorado County Clerk
360 Fair Lane
Placerville, CA 95667

Fresno County Clerk
2221 Kern Street
Fresno, CA 93721

Imperial County Clerk
940 Main Street, Suite 202
El Centro, CA 92243

Inyo County Clerk
P.O Drawer F
Independence, CA 93526

Kern County Clerk
1115 Truxtun Avenue, First Floor
Bakersfield, CA 93301-4639

Kings County Clerk/Recorder
Kings County Government Center
1400 W. Lacey Blvd.
Hanford, CA 93230

Lake County Clerk
255 North Forbes Street
Lakeport, CA 95453

Los Angeles County Clerk
12400 Imperial Highway
Norwalk, CA 90650

Madera County Clerk
200 West 4th Street
Madera, CA 93637

Mariposa County Clerk
4982 10th Street
Mariposa, CA 95338

Merced County Clerk
2222 M Street, Room 14
Merced, CA 95340

Mono County Clerk
PO Box 237
Bridgeport, CA 93517

Monterey County Clerk
P. O. Box 29
Salinas CA 93902-0570

Napa Recorder-County Clerk
PO Box 298
Napa, CA 94559-0298

Nevada County Clerk
950 Maidu Avenue
Nevada City, CA 95959

Orange County Clerk
12 Civic Center Plaza, Room 106
Santa Ana, CA 92701

Placer County Clerk
2954 Richardson Drive
Auburn, CA 95603

Plumas County Clerk
520 Main Street, Room 102
Quincy, CA 95971

Riverside County Clerk
PO Box 751
Riverside, CA, 92502-751

Sacramento County
Clerk Recorder's Office
PO Box 839
Sacramento, CA 95812-0839

San Benito Count Clerk
440 5th Street, Room 206
Hollister, CA 95023

San Bernardino County Clerk
222 West Hospitality Lane
San Bernardino, CA 92415-0022

San Diego County Clerk's Office
1600 Pacific Highway, Room 260
San Diego, CA 92101

San Joaquin County Recorder
PO Box 1968
Stockton, CA 95201

San Luis Obispo County Clerk
1055 Monterey St., Suite D120
San Luis Obispo, CA 93408

San Mateo County Clerk
Special Services
555 County Center, 1st Floor
Redwood City, CA 94063

Santa Barbara County Clerk
P.O. Box 159
Santa Barbara, CA 93102-0159

Santa Clara County
70 West Hedding Street
East Wing, First Floor
San Jose, CA 95110

Santa Cruz County Clerk
701 Ocean Street, Room 210
Santa Cruz, CA 95060

Sierra County Clerk
Heather Foster
PO Drawer D
Downieville, CA 95936

Solano County Clerk
675 Texas Street, Suite 1900
Fairfield, California 94533

Stanislaus County Clerk
1021 "I" Street, Room 101
Modesto, CA 95354

Sutter County Clerk
433 2nd Street
Yuba City, CA 95991

Tulare County Clerk
221 South Mooney Boulevard
Visalia, CA 93291

Tuolumne County Clerk
2 South Green Street, Second Floor
Sonora, CA 95370

Ventura County Clerk
Hall of Admin., Main Plaza
800 S. Victoria Ave.
Ventura, CA 93009-1260

Yolo County Clerk
625 Court Street, Room B01
Woodland, CA 95695

Yuba County Clerk
Terry Hansen
915 8th street, Suite 107
Marysville, CA 95901

APPENDIX B2

Notice of Preparation

Browns Valley Irrigation District
Post Office Box 6, Browns Valley, CA 95918
Business Office:
530/743-5703
FAX:
530/743-0445
Water Operations Office:
530/742-6044

NOTICE OF PREPARATION

To: Agencies and Interested Parties

From: Browns Valley Irrigation District

Date: July 9, 2009

Subject: **Announcement of:**

1) **Notice of Preparation of an Environmental Impact Report on the Multiyear Temporary Water Transfers Project;**
2) **Public Scoping Meeting to be held on Thursday, July 30, 2009, from 6 p.m. to 7 p.m. at the EDAW/AECOM office located at 2022 J Street in Sacramento; and**
3) **Scoping Comments due to Browns Valley Irrigation District by 3:00 p.m. on August 13, 2009.**

The Browns Valley Irrigation District (BVID) intends to prepare an environmental impact report (EIR), consistent with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.; see also 14 California Code of Regulations Sections 15220, 15222 [State CEQA Guidelines]), for the Multiyear Temporary Water Transfers Project (proposed project). BVID will be the state lead agency for compliance with CEQA.

In accordance with Section 15082 of the State CEQA Guidelines, BVID has prepared this notice of preparation (NOP) to inform responsible agencies, trustee agencies, and interested parties that an EIR will be prepared.
The purpose of an NOP is to provide sufficient information about the proposed project and its potential environmental impacts to allow responsible agencies, trustee agencies, and interested parties the opportunity to provide a meaningful response related to the scope and content of the EIR, including significant environmental issues, reasonable alternatives, and mitigation measures (State CEQA Guidelines, Section 15082[b]).

The project location, description, and probable environmental effects are presented below. The EIR will include feasible mitigation measures and consideration of a reasonable range of alternatives to avoid or substantially reduce any significant adverse environmental impacts that the proposed project may cause.

A CEQA public scoping meeting will be held during the 30-day public review period to provide agencies and the public with an opportunity to provide verbal and written comments on the scope and content of the EIR.

Introduction
CEQA specifies that a public agency must prepare an EIR on any project that it proposes to carry out or approve that may have a significant direct or indirect effect on the environment (PRC Section 21080[d]). In accordance with CEQA and the State CEQA Guidelines, BVID (as lead agency) is preparing an EIR to evaluate the environmental effects associated with the proposed Multiyear Temporary Water Transfers Project. The proposed project would involve short-term (one-year) water transfers of up to 3,100 acre-feet

per year (af/yr) of water conserved under BVID's pre-1914 water right (Conservation Water). Transfers would occur during the period, 2010 through 2025. The purpose of the proposed project is to maximize the Conservation Water's utility to BVID and to other water users. The Conservation Water is available for transfer because BVID implemented the Upper Main Water Conservation Project, making available 3,100 af/yr of transferable water. Transfer of the Conservation Water would facilitate the efficient use of water made available under the Upper Main Water Conservation Project.

The EIR will identify any significant environmental impacts of the proposed project and recommend mitigation measures to reduce the project's significant environmental impacts where feasible.

In accordance with Section 15082 of the State CEQA Guidelines, BVID has prepared this NOP to provide responsible and trustee agencies, and other interested parties with information describing the project and the issue areas that will be evaluated in the EIR.

Purpose of Scoping and this Notice of Preparation

The issuing of this Notice of Preparation initiates the scoping process. Input to the scoping process will be received at the public scoping meeting and in response to this NOP, as described below.

This notice provides the following:

1. This notice briefly describes the proposed project and the anticipated content of the EIR to be prepared for the proposed project.

2. This notice announces the public scoping meeting on the proposed project to facilitate public input. The public scoping meeting will be held Thursday, July 30, 2009, from 6:00 p.m. to 7:00 p.m. at the EDAW/AECOM office located at 2022 J Street in Sacramento, California. The objectives of the scoping meeting will be to:

   - provide background information on the proposed project and
   - obtain the views of agency representatives and the public on the scope and content of the EIR.

3. This notice solicits input from responsible and trustee agencies about the content and scope of the draft EIR (DEIR) to be prepared for the proposed project. Because of time limits mandated by state law, written comments must be received by BVID by 3:00 p.m. on August 13, 2009. Written comments can be hand carried, mailed, faxed, or e-mailed to:

   Mr. Walter Cotter, General Manager
   Browns Valley Irrigation District
   9370 Browns Valley School Road
   P.O. Box 6
   Browns Valley, CA 95918
   Telephone: (530) 743-5703
   Fax: (530) 743-0445
   E-mail: walter@bvid.org

   Agencies that will need to use the EIR when considering permits or other approvals for the proposed project should provide BVID with the name of the staff contact person. Comments provided by e-mail should include the name and address of the sender.

Project Background

BVID is one of the oldest irrigation districts (formed in 1888) in California, and includes approximately 55,000 acres located within Yuba County, east of Marysville. It has three major sources of water: (1) a pre-1914 direct diversion water right for 47.2 cubic feet per second (cfs) from the North Fork Yuba River, which is the most senior right on the river; (2) post-1914 appropriative water-right licenses for direct diversion from Dry Creek and storage in Merle Collins Reservoir, a storage facility on Dry Creek, which is a tributary to the Yuba River; and (3) a water supply contract with the Yuba County Water Agency

(YCWA). Historically, BVID diverted its Yuba River pre-1914 right in part at the head of BVID's Upper Main Canal, which consists of about 20 miles of ditches and flumes. The balance of the pre-1914 right has been diverted from the Yuba River, below Dry Creek, at BVID's Pumpline Canal diversion.

In 1990, BVID began a project to construct a pipeline to deliver water from Collins Lake to serve the area that was being served from the Upper Main Canal (the "water conservation project"). In connection with the water conservation project, BVID terminated deliveries from its Upper Main Canal because it was difficult to maintain and it experienced high seepage losses. The consumptive use savings through the water conservation project were quantified as 3,100 af/yr in a May 2002 report titled, *Analysis of Water Conserved Under the Upper Main Water Conservation Project*[1]. BVID's Resolution No. 3-7-90-1 approving the water conservation project (MBK Engineers 2002, Appendix G) states the intention of BVID to sell or use the Conservation Water within or outside its boundaries, in accordance with Water Code Sections 1011 and 1706, to help pay the cost of the water conservation project. This factor was an essential element in the economic feasibility of the water conservation project. Water made available as a result of the water conservation project may be transferred under Water Code Section 1011.

BVID historically has not transferred Conservation Water, and will not transfer Conservation Water, unless it has adequate supplies to serve the portion of its service area that uses water diverted from the Yuba River (Yuba River service area). The remainder of BVID's service area is served from Collins Lake, which is a separate source of water.

BVID has completed several temporary transfers of the Conservation Water since 1990 as follows:

1. 1990, to the United States Fish and Wildlife Service's Gray Lodge National Wildlife Refuge;
2. 1991 and 1992 to the California Department of Water Resources' (DWR's) State Water Bank;
3. 1993–1996 to the Sutter Bypass-Butte Slough Water Users Association;
4. 1997 to the U.S. Bureau of Reclamation (Reclamation) as part of a YCWA transfer; and
5. 2003, 2004, 2007, and 2008 to the Santa Clara Valley Water District (SCVWD).

Project Objectives

The purpose of the proposed project is to maximize the Conservation Water's utility to BVID and to other water users. The Conservation Water is available for transfer because BVID implemented the Upper Main Water Conservation Project, making the 3,100 af/yr of Conservation Water available for BVID to transfer. The project objectives are to transfer 3,100 af/yr of Conservation Water (1) when willing buyers are available and (2) consistent with all applicable constraints on the Central Valley Project (CVP) and State Water Project (SWP) systems.

Project Study Area

The project study area includes the following three areas that would potentially be affected by the proposed project (Exhibit 1):

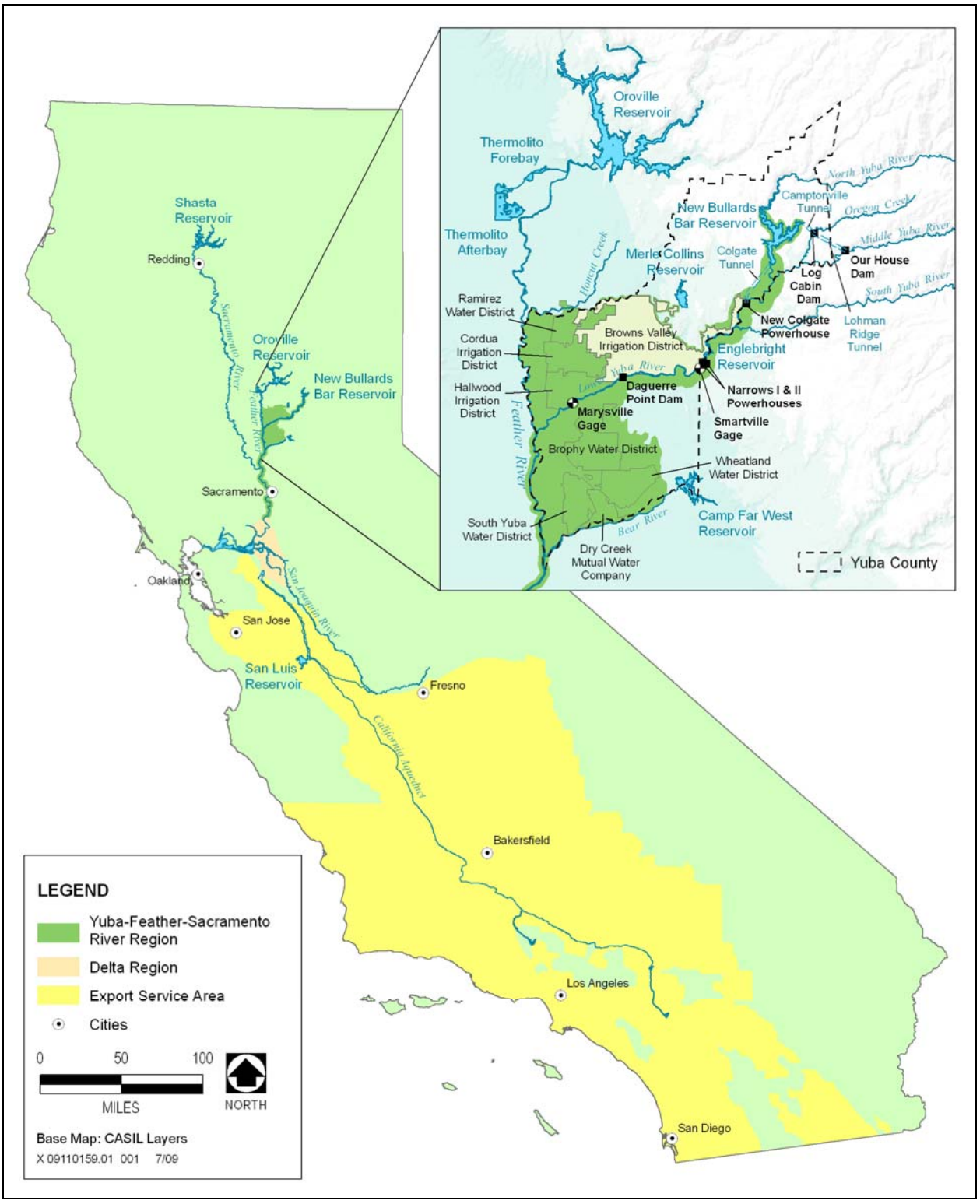
1. New Bullards Bar and Englebright Reservoirs and the Yuba, Feather, and Sacramento Rivers;

2. the Delta (including the CVP Jones Pumping Plant and the SWP Banks Pumping Plant in the south Delta (export pumps) (Exhibit 2); and

3. South-of-Delta CVP/SWP export service area (those lands that receive, store, or use CVP and SWP water pumped from the Delta, including the San Joaquin Valley, south-of-Delta CVP/SWP customers in the San Francisco Bay Area, south central California Coast, and southern California).

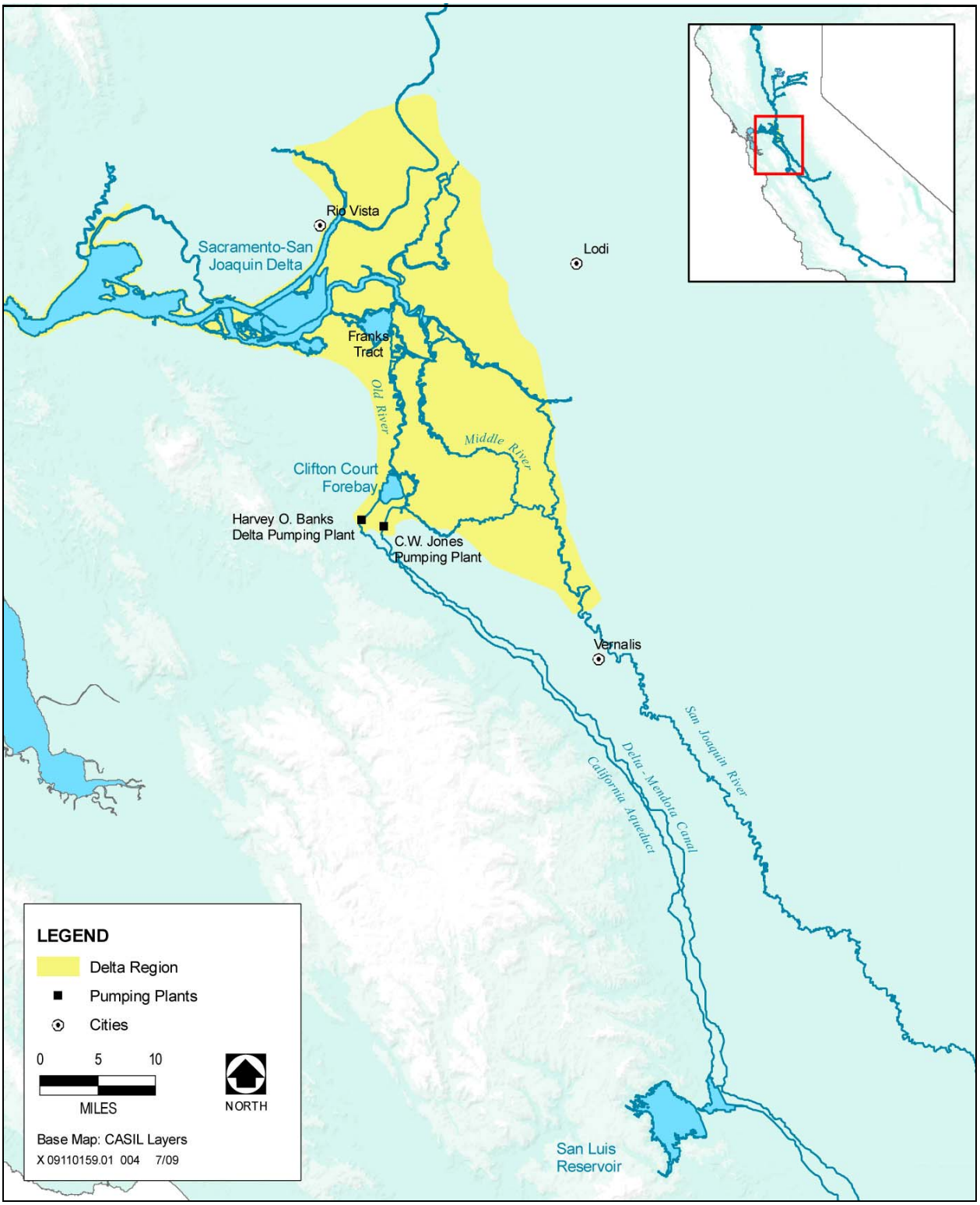
BVID's service area and other CVP/SWP facilities and operations would be unaffected by the proposed project. Because BVID's water conservation project has enabled BVID to serve all of its Yuba River service area's needs while diverting less water, transfers of the Conservation Water have had, and are anticipated to have, no impact on agricultural practices or land uses in BVID's service area.

[1] Browns Valley Irrigation District. 2002 (May). Analysis of Water Conserved Under the Upper Main Water Conservation Project. Prepared by MBK Engineers, Sacramento, CA.



Source: DWR, et al. 2007, adapted by EDAW 2009

Project Study Area **Exhibit 1**



Source: DWR, et al. 2007, adapted by EDAW 2009

Delta Region **Exhibit 2**

Project Description
BVID is proposing a multiyear series of short-term (one year) temporary water transfers to DWR, Reclamation, or south-of-Delta contractors of the CVP or SWP. BVID would transfer up to 3,100 af/yr of Conservation Water under its pre-1914 water right during the period 2010 through 2025. Through agreements between a willing seller (BVID) and willing buyers under California law, the proposed series of temporary water transfers would maximize the Conservation Water's utility to BVID and other water users. BVID intends to identify willing buyers (DWR, Reclamation, or CVP or SWP contractors) downstream of its water service area each year that could take delivery of the Conservation Water. BVID would execute one or more transfer agreements each year with willing buyers. Furthermore, the Conservation Water would only be transferred during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

The water transfers would occur over a period of 2–6-weeks between July 1 and November 30 of each year. To accommodate the schedule for making the water available to the buyer, the Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season. The Conservation Water would be released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba River Accord. The Conservation Water would flow through Englebright Reservoir and down the lower Yuba, Feather, and Sacramento Rivers in excess of existing minimum flow requirements to the Delta.

DWR's and Reclamation's pumping of the Conservation Water would be subject to all past and future State Water Resources Control Board (SWRCB) decisions and orders; any applicable court orders; and all applicable biological opinions covering CVP and SWP operations, including US Fish and Wildlife Service's December 15, 2008, biological opinion for delta smelt and the National Marine Fisheries Service's June 4, 2009, biological opinion for Sacramento River winter-run Chinook salmon, Sacramento River spring-run Chinook salmon, Central Valley steelhead, North American green sturgeon, and Southern Resident killer whales to the extent these opinions apply given pending court challenges against them.

While it is BVID's intent to transfer Conservation Water to DWR, Reclamation, or south-of-Delta CVP or SWP contractors, as covered in this project description, BVID potentially could transfer Conservation Water to other willing buyers. BVID would review any transfers to buyers not covered by this EIR through supplemental or separate CEQA review as necessary.

Alternatives to the Proposed Project
The CEQA-required No-Project alternative will be evaluated in the EIR. Action alternatives being considered are:

1. Transfers through groundwater substitution; and
2. Transfers through Collins Reservoir reoperation.

The total volume of the transfer will likely be fixed at 3,100 af/yr for each action alternative.

Potential Environmental Effects
Evaluation of environmental effects in the EIR will focus on the potential for the proposed project to have a significant effect on biological resources, hydrology, and water quality. BVID will incorporate by reference, into this EIR, relevant information from the Lower Yuba River Accord EIR/EIS[2], which was certified by the YCWA Board of Directors in October 2007 and includes a similar project area to the proposed project.

BVID anticipates that the following other issues will not be addressed in detail in the EIR for the reasons stated below.

[2] California Department of Water Resources, Yuba County Water Agency, and U.S. Department of the Interior, Bureau of Reclamation. 2007 (October). Final Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Yuba River Accord. Prepared by HDR I SWRI, Sacramento, CA.

1. *Aesthetics:* Because the Conservation Water would flow down the Yuba River, Feather River, and Sacramento River through the Delta in excess of minimum flow requirements, but would be relatively small in comparison to the water generally flowing in those water bodies, the increased volume of Conservation Water releases would not have a potential to cause a significant impact on aesthetics and would not be readily discernible to viewers under all but the lowest flow conditions on the lower Yuba River. No construction or other actions are proposed that could affect river morphology, riparian habitat, or otherwise affect existing aesthetics.

2. *Agricultural Resources:* The proposed water transfers would not involve any construction that would affect agricultural resources. BVID would only transfer Conservation Water when it has sufficient supplies to also make full deliveries to its Yuba River service area that relies on the water right involved in the proposed project. DWR or Reclamation pumping of the Conservation Water would be subject to all past and future SWRCB decisions and orders, court orders concerning the Delta and operation of the CVP and SWP export facilities, and applicable biological opinions affecting CVP and SWP operations. Therefore, the proposed project is not expected to cause or contribute to any land fallowing. Because the proposed project would involve no land fallowing, it would not make any contribution to any cumulative effects attributable to land fallowing that may be involved in other water transfers that may be proposed by other Sacramento Valley water users.

3. *Air Quality:* The proposed project does not involve any ground-disturbing activities; transport of hazardous materials; or use of heavy equipment or diesel-powered groundwater pumps that would generate emissions of air pollutants, including greenhouse gases. Also, the expected increase in flows and pumping rates would be minor and within historical average rates for the affected water bodies and facilities. Therefore, effects on air quality are not expected. In addition, because of the short-term duration of the proposed transfers, no significant effects of climate change on the project or project effects on climate change would occur.

4. *Cultural Resources:* The proposed project does not involve any ground-disturbing activities and no buildings or structures would be affected. Therefore, the proposed project would not affect cultural resources.

5. *Geology and Soils:* The proposed project does not involve any ground-disturbing activities and the increase in flows is not expected to affect river geomorphology because the volume of Conservation Water that would be introduced in excess of minimum flow requirements would be within historical average rates for the affected water bodies.

6. *Hazards and Hazardous Materials:* The proposed project does not involve the use or transport of hazardous materials, and Conservation Water would not be transferred during times when flows could result in flooding. The increase in flows resulting from the transfer of Conservation Water would also be small relative to existing reservoir and river levels, and is not expected to increase boating, which could indirectly lead to increased fuels, oils, and other contaminants being introduced to the water.

7. *Land Use and Planning:* The Conservation Water would only be transferred when BVID has sufficient water supplies available to serve all demands within its Yuba River service area. BVID will not implement any multiyear transfer agreements. Transfers of Conservation Water therefore would be limited to multiple one-year transfers, which cannot be relied upon as long-term sources of water and would not support new development. Significant effects on existing land use and planning would not occur.

8. *Mineral Resources:* The proposed project would not involve construction or activities that would affect mineral resources.

9. *Noise:* The proposed project does not involve any construction, modification of existing equipment, or installation or use of new equipment that would generate noise. Therefore, noise impacts would not occur.

10. *Population and Housing:* BVID would transfer Conservation Water only when BVID has sufficient water supplies available to serve all demands within its Yuba River service area. BVID would not sign any multi-year transfer agreements, so an end user of the Conservation Water could not rely on it from year to year. Project implementation does not involve construction, and no new employees are required. Therefore, the proposed project would not affect population or housing in the project study area.

11. *Public Services and Utilities:* No effects to public services (e.g., waste disposal, emergency services) are expected to result from activities associated with the proposed project. No road closures would be required and, therefore, no interruptions to emergency access would occur. In addition, no public utilities or infrastructure would be affected and no additional demands on public services would occur because the proposed transfer water would be used to replace water that is normally available within a buyer's service area, and the incremental increase in flows resulting from the water transfer would be minor and within the range of historical operations.

12. *Recreation:* The proposed project does not include construction or expansion of recreational facilities, and would not significantly increase the use of existing recreational facilities or increase boating activities on any rivers affected by the project or in the Delta because of the Conservation Water's amount would not be sufficient to substantially increase water levels in those water bodies.

13. *Transportation and Traffic:* The proposed project would not involve any construction nor would it involve any additional vehicle trips associated with employees that operate the facilities through which Conservation Water would be conveyed. Therefore, no changes to the level of service on local or regional roadways or effects on emergency access or parking capacity would occur.

The EIR for the proposed project will include mitigation measures where appropriate to reduce any potentially significant and significant impacts.

Required Approvals and Permits

This EIR will serve as a critical component of BVID's documentation necessary to satisfy the requirements of CEQA with regard to approval of the proposed project. BVID, acting as the lead agency, will oversee preparation and certification of the EIR and will be responsible for its availability to the public and other interested agencies and parties. BVID anticipates that state and local agencies that may purchase Conservation Water, as well as DWR in conveying water to SWP contractors, will rely on BVID's EIR.

The project does not involve any action by Reclamation or any other federal agency at this time, so no NEPA document is required. If Reclamation or a CVP contractor purchases Conservation Water in any given year, a NEPA document may be required at that time.

Because the proposed project involves a pre-1914 water right, BVID itself may change the Conservation Water's point of diversion, place of use and purpose of use under Water Code Section 1706.

APPENDIX B3

NOP Comment and Response

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

August 4, 2009

Walter Cotter
Browns Valley Irrigation District
P.O. Box 6
Browns Valley, CA 95918

RE: SCH# 2009072040 Browns Valley Irrigation District Multiyear Temporary Water Transfers EIR: Yuba County.

Dear Mr. Cotter:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

CC: State Clearinghouse

Native American Contact
Yuba County
August 4, 2009

Maidu Nation
Clara LeCompte
P.O Box 204 Maidu
Susanville , CA 96130

Enterprise Rancheria of Maidu Indians
Glenda Nelson, Chairperson
3690 Olive Hwy Maidu
Oroville , CA 95966
eranch@cncnet.com
(530) 532-9214
(530) 532-1768 FAX

Butte Tribal Council
Ren Reynolds
1693 Mt. Ida Road Maidu
Oroville , CA 95966
(530) 589-1571

Strawberry Valley Rancheria
Robert Kerfoot
PO Box 667 Maidu
Marysville , CA 95901 Miwok

Strawberry Valley Rancheria
Calvine Rose, Chairperson
PO Box 667 Maidu
Marysville , CA 95901 Miwok

Enterprise Rancheria of Maidu Indians
Art Angle, Vice Chairperson
3690 Olive Hwy Maidu
Oroville , CA 95966
eranch@cncnet.com
(530) 532-9214
(530) 532-1768 FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2009072040 Browns Valley Irrigiation District Multiyhear Temporary Water TRansfers EIR: Yuba County.

EDAW | AECOM

EDAW Inc
2022 J Street, Sacramento, California 95811
T 916.414.5800 F 916.414.5850 www.edaw.com

September 21, 2009

Ms. Kathy Sanchez
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Re: Browns Valley Irrigation District Temporary Water Transfers EIR, Yuba County

Dear Ms. Sanchez:

Regarding the above-referenced project, the Browns Valley Irrigation District (BVID) received a letter from your office on August 4, 2009 discussing potential concerns with potential project impacts to Native American cultural resources. The letter (attached) focuses on potential impacts to archaeological sites, human remains, and other potentially sensitive properties. The BVID recognizes the need to protect such resources but the Multiyear Temporary Water Transfers Project ("Project") would not require the construction or modification of any BVID facilities nor would it result in the construction or modification of water storage and conveyance facilities related to the Central Valley Project (CVP), the State Water Project (SWP) or those of potentially involved parties such as the U.S. Bureau of Reclamation (Reclamation) or the State of California Department of Water Resources (DWR) as discussed in the Notice of Preparation.

BVID is proposing a multiyear series of short-term (one year) temporary water transfers to DWR, Reclamation, or south-of-Delta contractors of the CVP or SWP. BVID would transfer up to 3,100 acre-fee per year of Conservation Water under its pre-1914 water right during the period 2010 through 2025. Through agreements between a willing seller (BVID) and willing buyers under California law, the proposed series of temporary water transfers would maximize the Conservation Water's utility to BVID and other water users. BVID intends to identify willing buyers (DWR, Reclamation, or CVP or SWP contractors) downstream of its water service area each year that could take delivery of the Conservation Water. BVID would execute one or more transfer agreements each year with willing buyers. Furthermore, the Conservation Water would only be transferred during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

The water transfers would occur over a period of 2–6-weeks between July 1 and November 30 of each year. To accommodate the schedule for making the water available to the buyer, the Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season. The Conservation Water would be released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba River Accord. The Conservation Water would flow through Englebright Reservoir and down the lower Yuba, Feather, and Sacramento Rivers in excess of existing minimum flow requirements to the Delta.

DWR's and Reclamation's pumping of the Conservation Water would be subject to all past and future State Water Resources Control Board decisions and orders; any applicable court orders; and all applicable biological opinions covering CVP and SWP operations, including US Fish and Wildlife

Service's December 15, 2008, biological opinion for delta smelt and the National Marine Fisheries Service's June 4, 2009, biological opinion for Sacramento River winter-run Chinook salmon, Sacramento River spring-run Chinook salmon, Central Valley steelhead, North American green sturgeon, and Southern Resident killer whales to the extent these opinions apply given pending court challenges against them.

While it is BVID's intent to transfer Conservation Water to DWR, Reclamation, or south-of-Delta CVP or SWP contractors, as covered in this project description, BVID potentially could transfer Conservation Water to other willing buyers. BVID would review any transfers to buyers not covered by this EIR through supplemental or separate CEQA review as necessary.

If you have any further questions regarding this project or concerns regarding cultural resources please feel free to contact me at your convenience. I can be reached by phone at 916-414-5800 or via email at Brian.Ludwig@edaw.com. I look forward to hearing from you soon.

Sincerely,

Brian Ludwig, Ph.D.
Senior Archaeologist

Attachment: Letter from NAHC dated 4 August 2009.

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APPENDIX C

Water Resources Analysis, MBK Engineers

Water Resources Analysis for

Temporary Water Transfers Project

Environmental Impact Report

Browns Valley Irrigation District

Prepared By

MBK ENGINEERS
2450 Alhambra Boulevard, Second Floor
Sacramento, California 95817

October 13, 2009

Table of Contents

List of Figures

List of Tables

Background

Browns Valley Irrigation District (BVID) is proposing a multiyear series of short-term, one year or less, transfers during the period 2010 through 2025. The transfers will involve up to 3,100 acre-feet per year of water conserved under BVID's pre-1914 water rights (Conservation Water). The purpose of the proposed series of short-term water transfers is to facilitate efficient delivery and re-allocation of water between a willing seller and willing buyers under California law. Conservation Water is available for transfer because BVID implemented the Upper Main Water Conservation Project, making available 3,100 acre-feet of transferable water. Transfer of Conservation Water would facilitate the efficient use of water made available under the Upper Main Water Conservation Project.

BVID intends to identify willing buyers downstream of its water service area each year that could take delivery of the Conservation Water. BVID will execute new transfer agreements each year and will not execute any agreements to provide a long-term water supply to any entity under this project. Identified willing buyers include the California Department of Water Resources (DWR) for the State Water Project (SWP), the U.S. Bureau of Reclamation (Reclamation) for the Central Valley Project (CVP) and south-of-Delta SWP and CVP contractors. It is expected that the transfer water would be pumped primarily, if not exclusively, at DWR's Delta export facilities. If Reclamation's facilities are used to pump water during any transfer year, then NEPA compliance may be necessary and would be prepared separately as needed. Analysis described in this report is based on the assumption that water is transferred through the SWP's Banks Pumping Plant. The water transfers would most likely occur over a two week period between July 1 and October 31. To accommodate the schedule for making water available to the buyer, Conservation Water would be temporarily stored by Yuba County Water Agency (YCWA) in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season for release during the transfer period (July 1 through October 31). The Conservation Water will be released into the Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba River Accord. The Conservation Water would flow down the Yuba River through the Feather and Sacramento Rivers to the Sacramento-San Joaquin River Delta (the Delta).

DWR's pumping of the Conservation Water will be subject to all past and future State Water Resources Control Board (SWRCB) decisions and orders, biological opinions, and court orders concerning the Delta and operation of CVP and SWP export facilities, including those imposed by the federal courts or through a subsequent biological opinion for conservation or protection of fish.

BVID is one of the oldest irrigation districts (formed in 1888) in California, and includes approximately 55,000 acres located within Yuba County, east of Marysville. It has three sources of water: (1) a pre-1914 direct diversion water right for 47.2 cubic feet per second (cfs) from the North Fork Yuba River, which is the most senior right on the river; (2) post-1914 appropriative water right licenses for Collins Lake, a storage facility on Dry Creek, a tributary to the Yuba River; and (3) a water supply contract with YCWA to supply water from the Yuba River. Prior to approximately 1964, the Yuba River pre-1914 right was diverted at the head of BVID's Upper Main Canal, which consisted of about 20 miles of ditches and flumes. From 1964 through 1990

a portion of the Yuba River pre-1914 right was diverted at the head of the Upper Main Canal, and the balance of the pre-1914 right was diverted from the Yuba River, below Dry Creek, at BVID's Pumpline Canal diversion.

In 1990, BVID began a water conservation project to construct a pipeline to deliver water from Collins Lake to the area served from the Upper Main Canal (the "water conservation project"). In connection with the water conservation project, BVID terminated deliveries from its Upper Main Canal, because the canal was difficult to maintain and experienced high seepage losses. The water conservation project resulted in a reduction in diversions at the Upper Main Canal of 5,500 acre-feet. The annual consumptive use savings through the water conservation project were quantified as 3,100 acre-feet in a May 2002 report titled *Analysis of Water Conserved Under the Upper Main Water Conservation Project*. Water previously diverted at the Upper Main Canal flows down the Yuba River and is available for transfer. Resolution No. 3-7-90-1 approving the water conservation project (Appendix G in above-referenced report [BVID 2002]) states BVID's intention to sell or use the Conservation Water within or outside of its boundaries in accordance with Sections 1011 and 1706 of the California Water Code to help pay the cost of the water conservation project. This factor was an essential element in the economic feasibility of the water conservation project because money from transfers has been used to help pay the cost of the water conservation project. BVID may transfer water made available as a result of the water conservation project under Water Code Sections 1011 and 1706. Because the Conservation Water supply is under a pre-1914 right, changes in the place of use, purpose of use, and point of diversion can be made under Water Code Section 1706 without approval of the State Water Board.

In regard to facilities and operations, this transfer is nearly identical to previous one-year temporary transfers between BVID and Santa Clara Valley Water District (2003, 2004, 2007, 2008, and 2009) and the State Water Bank (1991 and 1992). In 1997 the Conservation Water was transferred to Reclamation as part of a Yuba County Water Agency transfer. In addition, the Conservation Water was transferred under similar programs to willing buyers upstream of the Delta; to the Sutter Bypass-Butte Slough Water Users Association (1993-1996) and to Gray Lodge Wildlife Area in 1990.

Purpose of Analysis

The purpose of this water resources analysis is to evaluate changes in reservoir operations, stream flow, and Delta operations (Delta outflow and exports) for each of the project alternatives. This analysis quantifies changes in these parameters relative to the existing conditions. Analyses for other resource areas including fisheries, other aquatic wildlife, water-based recreation, riparian vegetation, agriculture, and others tier off of results of this water resources analysis.

Regulatory Setting

Existing conditions provide the environmental baseline for analysis of project effects. All alternatives are compared against existing conditions, including the No-Project Alternative. The following sections describe the existing conditions for areas that may be affected by the project. These areas may be affected due to the temporary storage of Conservation Water in New Bullards Bar Reservoir, changes in New Bullards Bar releases to facilitate transfers, or the diversion of the transferred water from a different location downstream. Areas that may be affected by the project include the Yuba River from New Bullards Bar Reservoir to the confluence with the Feather River, the Feather and Sacramento Rivers downstream of the Yuba River, the Delta, export facilities in the Delta, and the export service area.

Yuba River Operations

The portion of the Yuba River that may be affected by project alternatives is from New Bullards Bar Reservoir downstream to the confluence of the Yuba and Feather Rivers near Marysville. This includes storage and releases from New Bullards Bar Reservoir, releases from Englebright Reservoir, BVID diversions (for one alternative), and flows in the Yuba River at Marysville.

New Bullards Bar Reservoir is operated by YCWA for a variety of purposes including; flood control, water supply, fisheries benefits, and hydropower generation. Operations for each of these purposes are defined by one or more regulations, licenses, agreements, or contracts. Yuba River operations recently changed to incorporate the Lower Yuba River Accord (the Accord). The Accord modifies many of the existing agreements and contracts to provide the following benefits as described in the Accord's 2007 Draft EIR/EIS:

> "protect and enhance fisheries resources in the lower Yuba River, increase local supply reliability, and provide Reclamation and the California Department of Water Resources (DWR) with increased operational flexibility for protection of Sacramento-San Joaquin Delta (Delta) fisheries resources through the Environmental Water Account (EWA) Program, and provisions of supplemental dry-year water supplies to state and federal water contractors."

More specifically the Accord provides a new method for determining lower Yuba River in-stream flow requirements to provide a greater level of fisheries protection and enhancement than the existing in-stream flow requirements specified in SWRCB Revised Decision 1644 (RD-1644). The Accord flow requirements are specified at the Smartville and Marysville gages downstream of Englebright Reservoir. Operations under the proposed project alternatives would be in addition to operations required to maintain minimum flows in the lower Yuba River and therefore, the proposed project would not affect compliance with in-stream flow requirements specified in the Accord. In-stream flow requirements for the Accord are presented in the following tables.

Table 1: Minimum Yuba River Flow at Marysville (cfs) under the Yuba River Accord

Schedule[a]	Oct 1-31	Nov 1-30	Dec 1-31	Jan 1-31	Feb 1-29	Mar 1-31	Apr 1-15	Apr 16-31	May 1-15	May 16-31	Jun 1-15	Jun 16-30	Jul 1-31	Aug 1-31	Sep 1-30
1	500	500	500	500	500	700	1000	1000	2000	2000	1500	1500	700	600	500
2	500	500	500	500	500	700	700	800	1000	1000	800	500	500	500	500
3	500	500	500	500	500	500	700	700	900	900	500	500	500	500	500
4	400	500	500	500	500	500	600	600	900	600	400	400	400	400	400
5	400	500	500	500	500	500	500	600	600	400	400	400	400	400	400
6[b,c]	350	350	350	350	350	350	350	500	500	400	300	150	150	150	350

[a] Schedules are determined in the Yuba River Accord based on the North Yuba Index.
[b] Indicated flows represent the average flow rate at the Marysville Gage for the specified time periods listed above. Actual flows may vary from the indicated flows according to established criteria.
[c] Indicated Schedule 6 flows do not include an additional 30,000 acre-feet available from groundwater substitution to be allocated according to criteria established in the Fisheries Agreement.

Table 2: Minimum Yuba River Flow at Smartville (cfs) under the Yuba River Accord

Schedule	Oct 1-31	Nov 1-30	Dec 1-31	Jan 1-31	Feb 1-29	Mar 1-31	Apr 1-15	Apr 16-31	May 1-15	May 16-31	Jun 1-15	Jun 16-30	Jul 1-31	Aug 1-31	Sep 1-30
A[a]	700	700	700	700	700	700	700	[c]	[c]	[c]	[c]	[c]	[c]	[c]	700
B[b]	600	600	550	550	550	550	600	[c]	[c]	[c]	[c]	[c]	[c]	[c]	500

[a] Schedule A flows are to be used concurrently with Schedules 1, 2, 3, and 4 at Marysville.
[b] Schedule B flows are to be used concurrently with Schedules 5 and 6 at Marysville.
[c] During the summer months flow requirements at the downstream Marysville Gage will always control. Therefore, Schedule A and B flows were not developed for the May through August period. Flows at the Smartville Gage will equal or exceed flows at Marysville during this period.

In addition to meeting the above in-stream flow requirements, the Accord also establishes a carryover storage target in New Bullards Bar Reservoir of 650,000 acre-feet. As necessary, YCWA will release water from New Bullards Bar Reservoir in excess of the above minimum flows to reduce storage as nearly as possible to the target levels by the end of September each year.

YCWA operates New Bullards Bar Reservoir for flood control purposes and reserves 170,000 acre-feet of storage space for flood control at certain times of the year. No project alternative would change or modify flood control requirements at New Bullards Bar Reservoir.

YCWA also operates New Bullards Bar Reservoir for water supply. YCWA supplies water to various diverters of water from the lower Yuba River below Englebright Reservoir under those diverters' water rights and contractual entitlements. Table 3 summarizes those water rights and contracts by diverter.

Table 3: Lower Yuba River Water Rights and YCWA Contracts

Diverter	Water Rights (acre-feet)	Contract Water (acre-feet)
Browns Valley Irrigation District	24,462[a]	9,500
Brophy Water District	-	75,647
South Yuba Water District	-	44,330
Dry Creek Mutual Water Company	-	16,743
Wheatland Water District	-	40,230
Cordua Irrigation District	60,000	12,000
Hallwood Irrigation Company	78,000	-
Ramirez Water District	-	25,101
City of Maryville	-	2,500
Total	**162,462**	**226,051**

[a] As specified in RD-1644

Contract water supplies and water rights of Cordua Irrigation District and Hallwood Irrigation Company can be reduced based on forecasts of unimpaired runoff for the Yuba River at Smartville. BVID's water right may only be reduced when the flow in the North Fork of the Yuba River below Goodyear Bar is less than 47.2 cfs. BVID has never been required to reduce its diversions because the lowest minimum daily flow on record for the Yuba River below Goodyear Bar was 60 cfs recorded in September 1977.

YCWA generates hydroelectric power at the Colgate and Narrows II powerhouses from release from New Bullards Bar Reservoir in compliance with YCWA's existing Federal Energy Regulatory Commission (FERC) license for Project 2246, water right licenses for power production, and an existing power purchase contract between YCWA and Pacific Gas & Electric (PG&E). Project alternatives are not expected to significantly alter hydropower generation as a result of releases from New Bullards Bar Reservoir.

Englebright Dam and Reservoir are located downstream of New Bullards Bar Dam, at the confluence of the Middle and South Yuba rivers. Total storage capacity in Englebright Reservoir is approximately 70,000 acre-feet. The reservoir is primarily used to attenuate power peaking releases from New Colgate Powerhouse upstream, as a forebay for regulating releases through PG&E's Narrows I and YCWA's Narrows II Powerhouses, and for recreation. Englebright Reservoir has limited conservation storage. Water is released from Englebright Reservoir through the Narrows I and Narrows II Powerhouses. Changes in New Bullards Bar Dam releases under project alternatives are assumed to flow through Englebright Reservoir and result in the same change in Englebright Dam releases without affecting storage in Englebright Reservoir.

The Yuba River continues for approximately 24 miles below Englebright Dam to the confluence with the Feather River near Marysville. Flow is measured approximately one half mile below Englebright Dam at the Smartville gage and again approximately 6 miles upstream of the confluence with the Feather River at the Marysville gage. Between these gages Deer Creek and Dry Creek join the Yuba River; approximately one mile and ten miles below Englebright Dam, respectively. Water is diverted from the Yuba River for irrigation at BVID's Pumpline Canal

and at Daguerre Point Dam. Daguerre Point Dam is located approximately twelve miles below Englebright Dam and is used to divert water into YCWA's North and South Canals. BVID's Pumpline Canal is located approximately one mile upstream of Daguerre Point Dam. Water is lifted into the Pumpline Canal from a screened pumping facility on the north bank of the river. Combined diversions to all three canals have been approximately 300,000 acre-feet in recent years (DWR, YCWA, and Reclamation 2007).

Feather and Sacramento Rivers Upstream of the Delta

The Sacramento Valley encompasses approximately six million acres of developed agriculture and urban areas and undeveloped native areas. The Sacramento River system includes the Sacramento River and its major tributaries: the Feather, Yuba, Bear, and American Rivers and their tributaries. The CVP also imports Trinity River water through facilities on the Trinity River and Clear Creek. Most major streams and rivers in the Sacramento Valley are regulated by reservoirs of various sizes to provide flood control, water supply, hydropower, and other benefits.

Major reservoirs in the Sacramento Valley include the CVP's Shasta Reservoir (4.55 million acre-feet) on the Sacramento River, Folsom Reservoir (975,000 acre-feet) on the American River, and the SWP's Oroville Reservoir (3.56 million acre-feet) on the Feather River upstream of the confluence with the Yuba. These and other smaller reservoirs, the majority of which are owned by local public agencies, are operated for a variety of purposes including flood control, water supply, in-stream flow requirements, hydropower generation, and recreation. CVP and SWP reservoirs are also operated to meet flow and water quality standards in the Delta and to support Delta export operations. Project alternatives are not expected to affect upstream reservoir operations or Feather River flow upstream of the Yuba, Sacramento River flow upstream of the Feather, or American River flows. Project alternatives would result in only minor changes in river flows compared to existing conditions and therefore, reservoir operators are unlikely to change operations in response to such minor changes. Minor changes in Delta inflow may result in minor changes in Delta outflow, Delta exports, or both.

Delta Operations

The Sacramento-San Joaquin River Delta is an area of approximately 1,300 square miles. Water generally moves west through the Delta and flows out to the Pacific Ocean through the San Francisco Bay. The Delta serves as the hub of California's water supply by channeling water from northern watersheds to export facilities in the southern Delta. CVP and SWP pumping facilities in the southern Delta pump water into the Delta-Mendota Canal and the California Aqueduct for delivery to CVP and SWP contractors in the Delta export service area of each project. Operations of upstream CVP/SWP reservoirs and Delta pumping facilities are governed by various agreements, SWRCB decisions, and laws. Key agreements and decisions are summarized below.

Coordinated Operations Agreement

The 1986 Coordinated Operations Agreement (COA) set forth procedures for coordinated operations of CVP and SWP facilities and defined formulas for: 1) sharing responsibilities for meeting Delta standards contained in SWRCB D-1485, the existing standard at that time, and 2) sharing unstored flow. Under the COA, when water must be released from reservoirs to meet in-basin uses (as defined in the COA) 75 percent of the water must be provided by the CVP and 25 percent from the SWP. When unstored water is available for export (i.e. Delta exports exceed storage withdrawals while balanced conditions exist), the sum of CVP stored water, SWP stored water, and the unstored water for export is shared 55 percent to the CVP and 45 percent to the SWP.

Numerous physical and regulatory changes have occurred since 1986 that affect the COA including new facilities, the Central Valley Project Improvement Act (CVPIA), new water quality and flow standards, and Federal Endangered Species Act (ESA) responsibilities. These changes created new conditions that required interpretation and agreement for operational and accounting purposes.

SWRCB Decision 1641

The 1994 Bay-Delta Accord committed the CVP and SWP to Delta habitat protective objectives that were incorporated into the 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (1995 WQCP). The 1995 WCQP, along with the Vernalis Adaptive Management Plan (VAMP) were included in the SWRCB's Water Right Decision 1641 (D-1641) that amended CVP and SWP water rights. D-1641 set new Delta flow and water quality standards and required an interpretation of the COA sharing formulas. Reclamation and DWR agreed to use the original COA sharing formulas for meeting Delta outflow and salinity standards. D-1641 also includes export limitations associated with VAMP pulse flow periods (approximately April 15th thru May 15th) and an export to inflow (E/I) ratio limitation. These export restrictions are shared using "equity principles" to determine how to comply with D-1641 standards.

D-1641 water quality requirements can control CVP/SWP Delta operations at certain times of the year. In order to meet some water quality requirements a portion of Sacramento River inflow must flow through the Delta and become Delta outflow. The portion of Sacramento River flow that must flow through the Delta is determined based the numerous factors that influence Delta hydrodynamics and water quality (inflows, exports, tidal cycle, antecedent conditions, etc). Under these conditions a similar portion of any additional Delta inflow (such as inflow made available from a water transfer) must also go toward meeting water quality requirements if the increased inflow is to be exported. This portion of water required to go to outflow is typically referred to as carriage water and can reduce the volume of additional Delta inflow that can be exported.

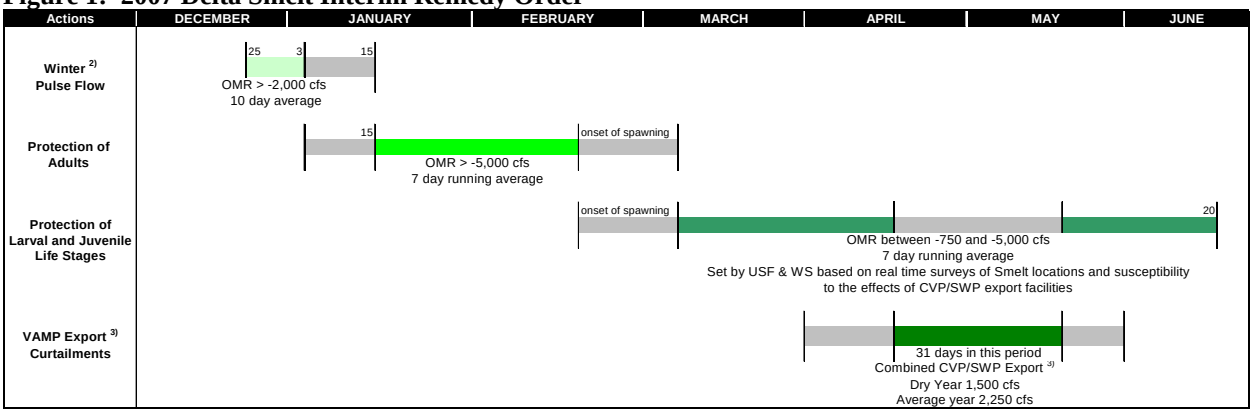
CVP/SWP operations under the COA and D-1641 requirements were considered in the evaluation of project alternatives. Project alternatives are operated in compliance with the COA and D-1641 requirements and include estimates of potential carriage water costs.

Endangered Species Act Responsibilities

CVP/SWP project operations have recently come under increased scrutiny regarding their impact on endangered species; specifically Delta smelt, distinct runs of Chinook salmon, Central Valley steelhead, and green sturgeon.

In December 2007, Judge Oliver Wanger of the United States District Court invalidated the previous Biological Opinion on Delta smelt and issued an Interim Remedy Order (Wanger Order) specifying flow requirements in Old and Middle River (OMR) for the protection of Delta smelt. CVP/SWP export operations can create reverse or negative flows in Old and Middle River. Wanger Order requirements limit CVP/SWP Delta exports by specifying flow requirements in these rivers. The Wanger Order flow limits vary depending on current Delta conditions and decisions made by various technical groups. Figure 1 summarizes parts of the Wanger Order that can affect Delta export operations.

Figure 1: 2007 Delta Smelt Interim Remedy Order[1]



1) This table only shows the parts of the December 14th Order that affect water supplies. The Order also includes monitoring requirements, prohibition of the installation of the Head of Old River Barrier in the Spring, and limited operations of the temporary agricultural barriers in the South Delta.
2) Triggered only if turbidity exceeds 12 NTU at any of 3 specific Delta Stations. Action lasts for 10 days once triggered.
3) The Vernalis Adaptive Management Plan (VAMP) includes San Joaquin River flow enhancements and curtailed SWP/CVP pumping.

Wanger Order restrictions were replaced by the Reasonable and Prudent Alternative (RPA) in the December 15, 2008 U.S. Fish and Wildlife Service (USFWS) Delta smelt Biological Opinion (Smelt BO) on the effects of CVP/SWP operations. Smelt BO limitations can be more restrictive in January and February and less restrictive from March through June, compared to the Wanger Order.

On June 4, 2009 National Marine Fisheries Service released a new Biological Opinion on the effects of CVP/SWP operations on salmon, steelhead, sturgeon, and killer whales (Salmon BO). The RPA included in the Salmon BO has the potential to further restrict CVP/SWP operations, including Delta exports. Potential export restrictions under the Salmon BO would occur from November 1 through June 15, and have significant overlap with restrictions under the Smelt BO.

Endangered species act requirements on Delta operations are included in the analysis of alternatives and discussed further in subsequent sections.

SWP Delta Export Service Area

The SWP Delta export service area includes the southern San Francisco Bay area including San Jose, the central San Joaquin Valley, the south coast region, and the greater Los Angeles and San Diego metropolitan areas. The SWP has entered into agricultural and M&I contracts to supply more than four million acre-feet of water but typically does not deliver this amount due to a combination of hydrology and regulatory requirements.

An annual transfer of up to 3,100 acre-feet is not likely to create significant changes in the operations of potential transferees because transfers would only occur when a SWP contractor receives less than full contract supplies. The same would be true for temporary deliveries to CVP south-of-Delta contractors. Because of the temporary nature of BVID's proposed transfers, buyers could not rely on them as a long-term supply and therefore, such supplies could not be used to serve new growth in a transferee's service territory.

Existing Conditions Transfers

BVID has executed one-year temporary transfers of conserved water in 13 of the 19 years since constructing the Upper Main Water Conservation Project in 1990. Since 2003, transfers have gone through the Delta to an SWP contractor in the Delta export service area. BVID's past Conservation Water transfers are summarized in Table 4.

Table 4: Historical BVID Transfers of Conservation Water

Year	Transferee
1990	Gray Lodge Wildlife Area
1991-1992	State Drought Water Bank
1993-1996	Sutter Bypass-Butte Slough Water Users Association
1997	Reclamation[a]
1998-2002	No Transfer
2003-2004	Santa Clara Valley Water District
2005-2006	No Transfer
2007-2009	Santa Clara Valley Water District

[a] As part of YCWA transfer

BVID has transferred or attempted to transfer its Conservation Water to a south-of-Delta SWP contractor each year since 2003 under temporary, one-year agreements. In 2005 and 2006, Delta

conditions did not allow the transfer of water from north of the Delta although BVID contracted with Santa Clara Valley Water District to transfer the Conservation Water. Therefore, transfer of the Conservation Water to a south-of-Delta SWP contractor is part of the existing conditions.

Analytical Approach

The analytical approach presented in this report began with the best, currently available, models simulating Yuba River and CVP/SWP system operations. Current operations for each system are simulated in models developed and maintained by those agencies that operate the facilities of each system and are most familiar with the operating rules, regulations, agreements, and physical limitations. These models are the best science available for completing this analysis. The Yuba River system is modeled by YCWA and its consultants. The CVP/SWP system is modeled by Reclamation, DWR and their consultants using the CalSim II model. Brief descriptions of these existing models are provided below.

Operations in these existing models do not include annual transfers of Conservation Water. Analysis presented in this report begins with simulations of current Yuba and CVP/SWP operations without transfer of Conservation Water and superimposes the transfer of Conservation Water on those operations to determine the incremental change in operations. Transfer operations are simulated to occur subject to all the operating rules, regulations, agreements, and physical limitations that constrain operations in the existing models. Results presented in this report were developed from this incremental analysis of project alternatives layered onto a simulation of current system operations without the project.

CalSim II

CalSim II is a planning model designed to simulate the operations of the CVP and SWP reservoirs and water delivery system for current and future facilities, flood control criteria, water delivery policies, in-stream flow and Delta outflow requirements, and hydroelectric power generation. CalSim II is the best available tool for modeling the CVP and SWP and is the only system-wide hydrologic model being used by DWR and Reclamation to conduct planning and impact analyses of potential projects.

CalSim II is a simulation by optimization model. The model simulates operations by solving a mixed-integer linear program to maximize an objective function for each month of the simulation. CalSim II was developed to simulate the operation of the CVP and SWP for defined physical conditions and a set of regulatory requirements. The current version of CalSim II simulates SWRCB D-1641, CVPIA b(2) accounting, export restrictions associated with Old and Middle River flow requirements, and estimates of transfers that typically occur during periods of prolonged drought. The model simulates these conditions using 82 years of historical hydrology from water year 1922 through 2003.

CalSim II modeling conducted for this project is based on the Common Assumption model package, developed jointly by Reclamation and DWR. At this time, version 9B is considered the best available depiction of system facilities and operations for this evaluation. CalSim II common assumptions for the operation of the CVP/SWP system are included as Attachment 1.

Modeling ESA Restrictions

Delta export restrictions for the protection of endangered species present significant modeling challenges. Many export restrictions are triggered based on real-time monitoring data (turbidity, fish salvage, etc.) and/or decisions made by technical working groups. Simulation of key data or decisions of technical working groups that consider myriad factors and information can be very difficult. Reclamation and DWR are in the process of updating existing planning models such as CalSim II to address the RPAs in both the Salmon and Smelt BOs.

The Common Assumptions version of CalSim II was modified to simulate the more restrictive end of the range of Old and Middle River flow criteria specified in Judge Wanger's 2007 Interim Remedy Order. Water operation modeling for the existing condition and project alternatives was based on simulation of CVP/SWP operations under the more restrictive OMR flow criteria. It was assumed that turbidity exceeds 12 NTU at the sampling stations on December 25th of every year triggering OMR restrictions in December. Also, it was assumed that smelt spawning commences on February 19th, and that the USFWS imposes the strictest OMR criteria allowed from this day forward through the 20th of June. Table 5 provides the resulting OMR criteria applied in the modeling. A day weighted average was applied where the criteria varies over a single month for modeling at a monthly time-step. CVP and SWP south-of-Delta delivery allocation procedures were updated to account for resulting reductions in available Delta export capacity. OMR criteria are applied to both the existing condition and the project alternatives.

Table 5: Assumed Old and Middle River Flow Criteria used in CalSim II

Date	CalSim II OMR Criteria (cfs)
December 25th – January 3rd	-2,000
January 4th – February 18th	-5,000
February 19th – April 14th	-750
April 15th – May 15th	Exports controlled by VAMP criteria
May 16th – June 20th	-750

These criteria are slightly different than those provided in the Smelt BO RPA. Smelt BO limitations can be more restrictive in January and February, and are less restrictive from March through June. OMR criteria have the potential to restrict exports from late December through late June, outside the period when transfers would occur under this project. Therefore, differences between modeled OMR criteria and those specified in the Smelt BO RPA would not significantly change results of this analysis.

Additionally, criteria specified in the Salmon BO RPA are not addressed in the modeling. These criteria may further restrict export operations from November 1 through June 15. Operational changes as a result of the Salmon BO would not significantly change this analysis for several reasons. Through-Delta transfers of Conservation Water are assumed to occur during a two week period between July 1 and October 31 of each year. Through-Delta transfers can occur when the following conditions are met. The Delta must be in balanced conditions according to COA accounting. Balanced conditions are defined in the COA as periods when it is mutually

agreed that releases from upstream reservoirs plus unregulated flows approximately equal the water supply needed to meet Sacramento Valley in-basin uses plus exports. Second, there must be available export pumping capacity at Banks Pumping Plant (Banks). Criteria specified in the Salmon BO RPA are not expected to significantly change the occurrence of either of these conditions during a majority of the potential transfer period compared to operations that include Wanger Order OMR flow criteria.

Yuba River Model

The Common Assumptions version of CalSim II does not include an explicit representation of Yuba River operations. Yuba River operations are simulated in a separate model maintained by YCWA. This model simulates reservoir operations and stream flows on the North, Middle, and South Yuba River and Deer Creek. YCWA provided simulation results that represent a No-Project Alternative for operations of these reservoirs. These operations included implementation of the Lower Yuba River Accord. Project Alternatives have the potential to affect Yuba River operations from New Bullards Bar Reservoir downstream to the confluence of the Yuba and Feather Rivers.

BVID Transfer Analysis Model

A spreadsheet model was developed from CalSim II and Yuba River model output to analyze each of the project alternatives. CalSim II and Yuba River model output represent the No-Project Alternative because these simulations do not include an explicit representation of Conservation Water or the transfers that have occurred since 1990. These models provide an operation of the water system that complies with current regulations and operating criteria and can be interpreted to understand how transfers occur in the existing conditions and under each Project Alternative.

Output from these two models is used in conjunction with operational criteria for the Yuba River and CVP/SWP system operations to simulate how changes under the different Project Alternatives affect the system. The effects are simulated as an incremental change relative to the existing conditions. The spreadsheet model simulates these incremental changes to provide a simulation of the Project Alternatives. The model ensures compliance with existing flow and water quality requirements throughout the Yuba, Feather, and Sacramento Rivers and the Delta so that water is only transferred when allowed under current regulations.

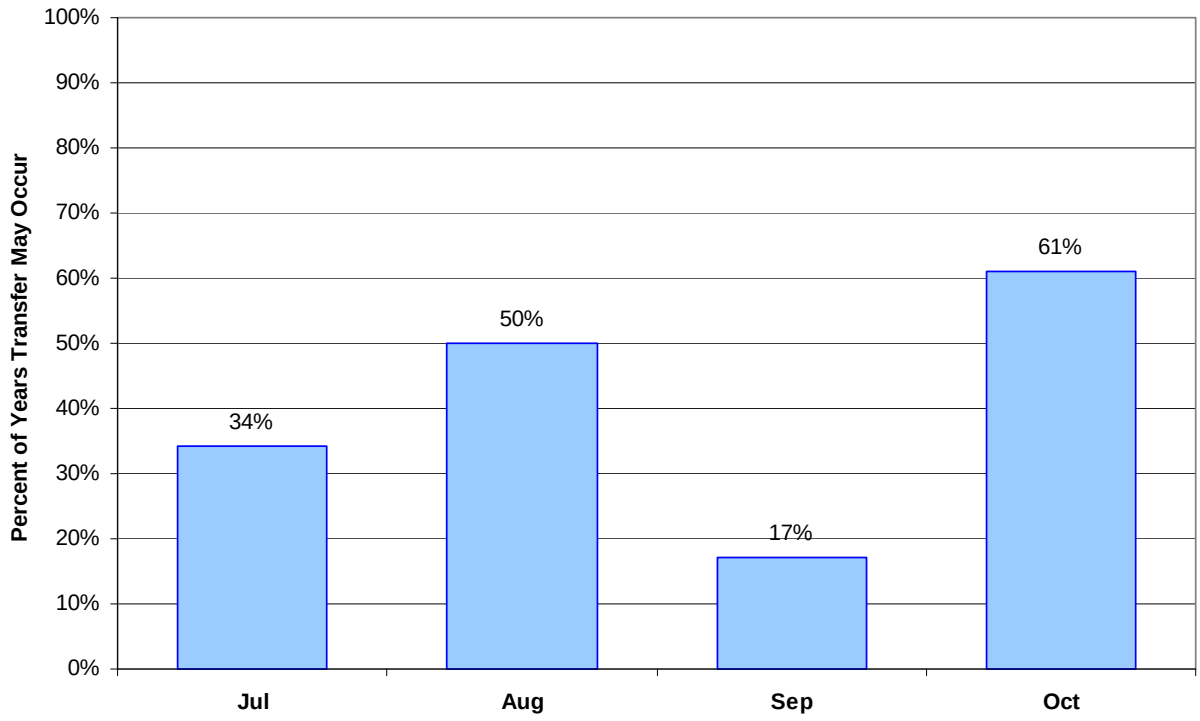
Modeling Existing Conditions Transfers

Yuba River model and CalSim II results were used to depict an initial operation of the system without transfer of the Conservation Water. Operations to facilitate transfer of the Conservation Water to south-of-Delta transferees were superimposed on this initial operation to establish the existing conditions. Operations to facilitate transfer of the Conservation Water include temporarily storing Conservation Water in New Bullards Bar Reservoir and releasing it when conditions in the Delta allow the water to be exported. CalSim II model results were analyzed to

determine if simulation of the Delta depicted balanced or surplus conditions and to estimate available Banks export capacity.

The following figure illustrates the frequency of the Delta being in balanced conditions and there being at least 3,100 acre-feet of available Banks export capacity for each month in the potential transfer period.

Figure 2: Frequency of Delta Conditions that Allow Transfer of 3,100 acre-feet



Annual analysis of results illustrated in Figure 2 demonstrates that a transfer of 3,100 acre-feet would be possible in at least one month of the potential transfer period in approximately 72 percent of all years.

Existing Conditions

The following tables summarize existing conditions at select locations in the system that may be affected by changes under the project alternatives. Results are summarized as average monthly values by Sacramento Valley Water Year Hydrologic Classification Index (40-30-30 Index) and the average for all 82 years simulated. Results are presented here for comparison with results at the same locations for other project alternatives.

Table 6: Average Monthly New Bullards Bar Reservoir Release under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	53	60	157	236	196	235	166	236	206	174	149	60	1,927
AN	42	48	81	120	120	171	137	154	164	137	122	55	1,352
BN	51	43	54	72	57	48	88	134	132	119	127	54	979
D	44	41	38	35	29	33	59	106	95	103	98	48	729
C	44	41	41	38	21	21	34	82	72	85	74	39	591
All Yrs	**48**	**48**	**85**	**118**	**99**	**118**	**106**	**155**	**143**	**130**	**119**	**53**	**1,223**

Table 7: Average Monthly New Bullards Bar Reservoir Storage under Existing Conditions

Average by Year Type (1,000 acre-feet)												
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
W	577	594	651	689	749	773	870	947	925	808	681	638
AN	535	543	557	632	702	773	856	945	892	785	678	634
BN	572	555	557	567	632	714	845	925	882	787	673	629
D	518	509	518	529	596	703	797	823	779	691	602	562
C	539	515	498	493	517	577	624	607	568	491	423	390
All Yrs	**551**	**550**	**569**	**596**	**655**	**719**	**812**	**866**	**828**	**729**	**624**	**583**

Table 8: Average Monthly Englebright Reservoir Release under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	61	83	236	348	292	318	239	371	302	186	152	63	2,652
AN	47	70	118	199	194	250	190	249	211	142	125	59	1,852
BN	54	52	78	108	123	93	142	182	149	122	129	55	1,289
D	49	52	57	57	73	88	92	126	104	106	99	50	953
C	51	49	51	54	45	49	52	94	78	88	75	41	726
All Yrs	**53**	**64**	**125**	**179**	**165**	**180**	**155**	**226**	**186**	**137**	**121**	**55**	**1,647**

Table 9: Average Monthly Yuba River at Marysville under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	42	80	249	378	321	345	240	313	241	114	93	44	2,461
AN	30	65	122	219	214	270	183	190	150	70	66	39	1,616
BN	34	44	79	117	139	101	131	119	88	50	69	35	1,007
D	29	45	56	61	82	97	74	62	43	33	39	30	652
C	31	40	48	58	50	53	34	35	22	23	20	22	437
All Yrs	**34**	**58**	**130**	**194**	**182**	**195**	**147**	**166**	**126**	**66**	**63**	**35**	**1,396**

Table 10: Average Monthly Feather River below Marysville under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	245	284	744	1,105	1,026	1,159	645	786	555	502	265	179	7,495
AN	196	190	334	530	672	740	308	424	370	614	419	185	4,981
BN	241	177	239	354	371	298	239	219	288	600	430	190	3,647
D	199	150	201	195	204	289	173	159	256	529	358	179	2,891
C	193	165	200	154	145	156	113	123	226	391	214	150	2,232
All Yrs	**219**	**205**	**399**	**554**	**553**	**613**	**345**	**402**	**369**	**525**	**329**	**177**	**4,689**

Table 11: Average Monthly Sacramento River at Hood under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	838	1,198	2,713	3,396	3,404	3,201	2,346	1,995	1,433	1,234	949	1,088	23,794
AN	661	931	1,327	2,658	2,829	2,856	1,564	1,361	1,002	1,323	963	799	18,276
BN	736	735	1,089	1,520	1,925	1,514	1,112	918	846	1,323	907	753	13,378
D	654	727	962	1,074	1,277	1,390	806	708	757	1,199	832	657	11,043
C	635	578	721	847	826	805	596	456	690	895	594	520	8,164
All Yrs	**725**	**886**	**1,557**	**2,085**	**2,223**	**2,114**	**1,427**	**1,211**	**1,013**	**1,205**	**866**	**811**	**16,122**

Table 12: Average Monthly Delta Outflow under Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	412	826	2,955	5,265	5,475	5,046	3,101	2,429	1,509	734	335	569	28,656
AN	243	560	1,133	3,005	3,594	3,527	1,843	1,500	798	629	247	225	17,304
BN	276	331	806	1,439	2,146	1,712	1,318	1,004	510	501	261	205	10,511
D	264	393	581	894	1,282	1,486	864	684	368	374	249	186	7,627
C	257	274	369	642	758	812	533	355	310	287	261	179	5,036
All Yrs	**309**	**527**	**1,422**	**2,645**	**3,021**	**2,853**	**1,746**	**1,363**	**809**	**535**	**280**	**315**	**15,824**

Table 13: Average Monthly SWP Delta Export under Existing Conditions

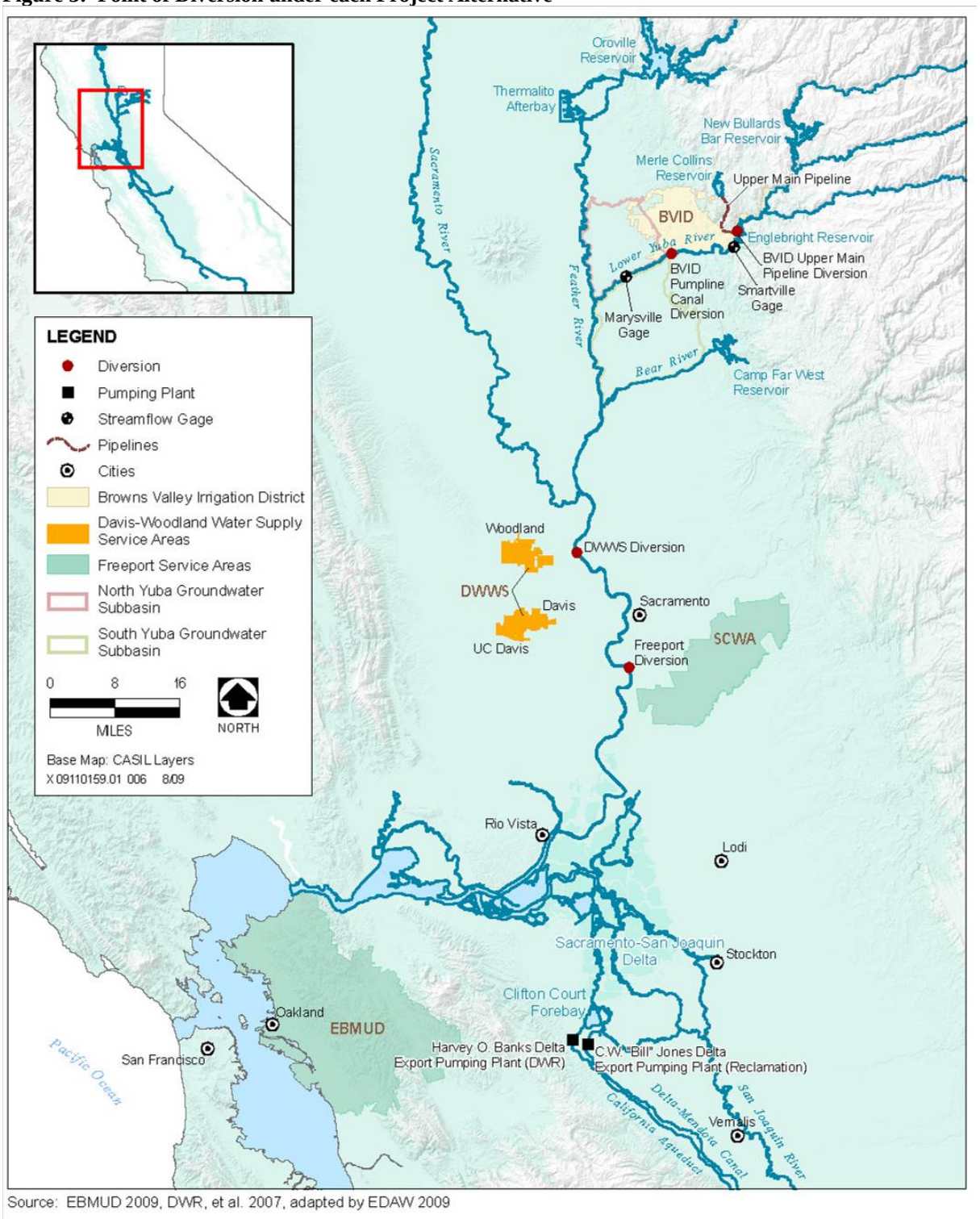
Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	303	367	348	316	293	228	173	169	188	403	401	392	3,579
AN	253	291	320	258	217	126	81	77	151	385	401	357	2,917
BN	296	298	278	214	212	110	67	68	109	403	362	327	2,744
D	238	240	287	204	142	59	40	34	102	397	308	256	2,309
C	218	170	222	174	123	44	26	23	101	272	134	149	1,654
All Yrs	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**137**	**380**	**335**	**310**	**2,779**

Project Alternatives

Project alternatives consider transfer of Conservation Water to several different potential transferees or use of Conservation Water within BVID. Differences between alternatives occur primarily from the location of the potential transferee and its point of diversion for the transfer water. The point of diversion can influence how frequently the transfer may occur. For example, use of the Conservation Water within BVID or transfer to a north-of-Delta transferee can occur every year while transfers south of the Delta are limited in some years by conditions in the Delta. Operational changes as a result of changes in the point of diversion for the Conservation Water create the majority of the changes between the Existing Condition and the project alternatives.

The following figure illustrates the point of diversion for the Conservation Water under each Project Alternative.

Figure 3: Point of Diversion under each Project Alternative



Source: EBMUD 2009, DWR, et al. 2007, adapted by EDAW 2009

Additionally, changes in the timing of when Conservation Water is made available for transfer affect water operations. Project alternatives include two "timing" options. One option involves temporarily storing Conservation Water in New Bullards Bar Reservoir as it is conserved and

then releasing the entire 3,100 acre-feet for transfer over a two-week period. The second option does not require temporarily storing Conservation Water in New Bullards Bar Reservoir. Instead the water is released from New Bullards Bar Reservoir and diverted downstream on the same pattern under which it is conserved. These changes in the timing of the transfer also create differences between the existing conditions and project alternatives.

Preferred Alternative: Transfer to Delta Export Area

Under the Preferred Alternative, BVID would enter into temporary short-term transfer agreements each year with contractors in the Delta export area. BVID has previously entered into these types of agreements with Santa Clara Valley Water District, but this analysis assumes a transfer to anywhere in the Delta export area.

South-of-Delta transfer operations require Conservation Water to be temporarily stored in New Bullards Bar as it is conserved. This water is then released for export when Delta conditions allow transfers through the Delta. In order to transfer water through the Delta two conditions must be met: the Delta must be in balanced conditions and there must be available export capacity at the Banks Pumping Plant.

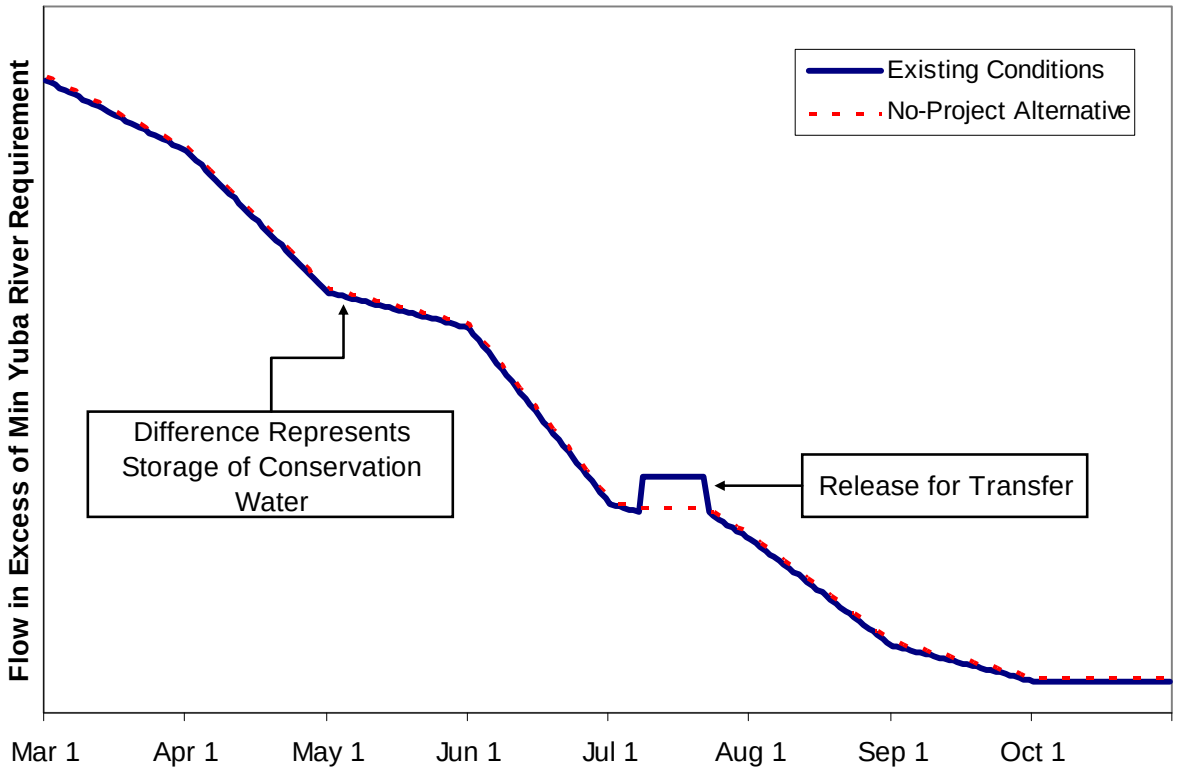
Water operations under the Preferred Alternative are the same as in the existing conditions because the existing conditions include past one-year transfers of Conservation Water to a south-of-Delta SWP contractor. These results are presented above in Table 6 through Table 13.

Alternative 1: No-Project Alternative

Under the No-Project Alternative (Alternative 1), BVID would not identify or execute temporary transfer agreements each year with willing buyers that could take delivery of the Conservation Water. If BVID does not use the Conservation Water, it would become uncommitted water that YCWA would control. YCWA could store or release the water on a different schedule depending on its operational needs, Yuba Accord constraints, and other considerations.

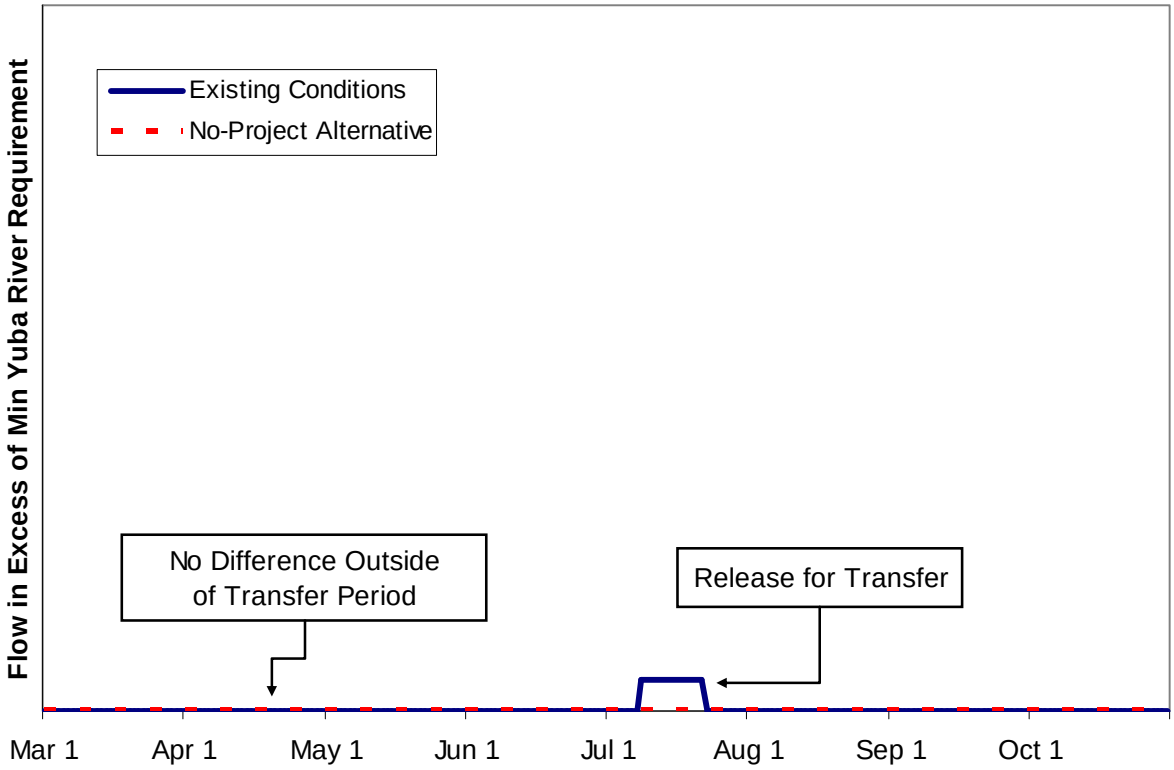
In some years under the No-Project Alternative, Conservation Water would flow through New Bullards Bar and Englebright Reservoirs and be released down the lower Yuba River in excess of existing minimum flow requirements. This water may be used by others downstream. This typically occurs in wetter year types when releases from New Bullards Bar provide flow in excess of minimum downstream requirements. This would result in minor changes in New Bullards Bar Reservoir releases relative to existing conditions wherein Conservation Water is stored for future release when it can be transferred. Figure 4 illustrates how flows in excess of the minimum Yuba River requirement would change under these two conditions.

Figure 4: Flow in Excess of Minimum Yuba River Requirements under Existing Conditions and No-Project Alternative in Wetter Year Types



Under the No-Project Alternative, in drier year types when New Bullards Bar Reservoir releases are controlled by minimum Yuba River flow requirements, YCWA may store Conservation Water in the reservoir and use or spill it in future months. Under the No-Project Alternative, releases are reduced in months when transfers occur relative to the existing conditions. This can keep New Bullards Bar Reservoir storage slightly higher and increase releases in future months by a minor amount under the No-Project Alternative. Figure 5 illustrates changes in Yuba River flows in excess of the minimum requirements under drier year types.

Figure 5: Flow in Excess of Minimum Yuba River Requirements under Existing Conditions and No-Project Alternative in Drier Year Types



The following tables summarize simulated No-Project Alternative reservoir release, reservoir storage, and stream flow at select locations in the Yuba, Feather, and Sacramento Rivers and the Delta. Results are compared to existing conditions and differences are provided along with the average percent difference for each month.

Table 14: Average Monthly New Bullards Bar Reservoir Release under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	53	60	157	237	196	235	166	236	206	173	149	60	1,928
AN	42	48	81	121	120	171	137	154	164	135	122	55	1,352
BN	51	43	54	73	57	48	89	134	133	118	126	54	979
D	44	41	38	37	29	33	59	106	95	102	96	48	728
C	44	41	41	39	21	21	34	82	72	83	73	39	590
All Yrs	**48**	**48**	**85**	**119**	**99**	**118**	**106**	**155**	**143**	**129**	**119**	**53**	**1,223**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	6%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	4%	0%	0%	1%	0%	0%	-1%	-1%	0%	0%
D	0%	0%	0%	8%	0%	0%	0%	0%	0%	-1%	-2%	0%	0%
C	0%	0%	0%	6%	1%	0%	0%	0%	0%	-3%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**4%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**0%**	**0%**

Table 14 presents average monthly New Bullards Bar Reservoir releases under Alternative 1 and quantifies how releases change relative to existing conditions. Irrigation season changes in wetter year types occur as illustrated in Figure 4 with slightly higher releases April through June and September and October and lower releases in July and August when transfers occur under existing conditions. In drier year types releases are lower relative to existing conditions during July and August because transfers do not occur. Increased releases in January under Alternative 1 occur because transfers in drier year types under existing conditions come out of New Bullards Bar Reservoir storage, thereby reducing surplus releases in January of subsequent years. Surplus releases can increase by as much as 3,100 acre-feet during January under the No-Project Alternative, if Conservation Water is stored in New Bullards Bar Reservoir and then spills.

Table 14 also shows that changes in New Bullards Bar Reservoir releases are only a small percentage of releases under existing conditions. The largest percent differences (4 %) occur in January when Conservation Water stored in New Bullards Bar spills under the No-Project Alternative. The following tables illustrate how these changes are typically smaller percentages of flow as the released water moves downstream.

Table 15: Average Monthly New Bullards Bar Reservoir Storage under No-Project Alternative

Average by Year Type (1,000 acre-feet)												
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
W	578	596	652	689	749	773	870	947	925	808	682	638
AN	536	544	558	632	702	773	856	944	891	786	678	635
BN	573	556	558	567	632	714	845	924	881	786	673	630
D	520	511	520	529	596	703	796	823	778	691	605	564
C	540	516	500	493	517	577	624	607	568	494	426	392
All Yrs	**553**	**551**	**571**	**596**	**655**	**719**	**811**	**866**	**828**	**729**	**625**	**584**
Comparison to Existing Conditions (Alternative minus Existing Conditions)												
W	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4
AN	1.0	1.0	1.0	0.0	0.0	0.0	-0.2	-0.5	-0.7	0.9	0.9	0.8
BN	0.9	0.9	0.9	0.0	0.0	0.0	-0.5	-0.7	-1.0	-0.4	0.8	0.8
D	1.7	1.7	1.7	0.0	0.0	0.0	-0.3	-0.4	-0.5	0.3	2.4	2.4
C	1.6	1.6	1.6	0.2	0.0	0.0	0.0	0.0	0.0	2.5	2.8	2.8
All Yrs	**1.3**	**1.3**	**1.3**	**0.0**	**0.0**	**0.0**	**-0.2**	**-0.3**	**-0.4**	**0.6**	**1.4**	**1.3**
Average Percent Change from Existing Conditions												
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Results presented in Table 15 illustrate how changes in New Bullards Bar Reservoir releases affect storage conditions. Increased in releases from April through June under Alternative 1 create slightly lower reservoir storage until July and August when water is transferred under the existing conditions. Because water is not transferred under the No-Project Alternative, storage is slightly higher until January. In January, any Conservation Water stored in New Bullards Bar Reservoir under Alternative 1 is spilled and storage conditions are the same as existing conditions again in February.

Table 16: Average Monthly Englebright Reservoir Release under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	61	83	236	350	292	318	239	371	302	186	152	63	2,653
AN	47	70	118	200	194	250	190	249	211	140	125	59	1,853
BN	54	52	78	109	123	93	142	182	150	122	127	55	1,289
D	49	52	57	59	73	88	92	126	105	105	97	50	952
C	51	49	51	55	45	49	52	94	78	86	75	41	725
All Yrs	**53**	**64**	**125**	**180**	**165**	**180**	**156**	**226**	**187**	**136**	**121**	**55**	**1,647**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	2%	0%	0%	0%	0%	0%	-1%	-1%	0%	0%
D	0%	0%	0%	4%	0%	0%	0%	0%	0%	-1%	-2%	0%	0%
C	0%	0%	0%	3%	0%	0%	0%	0%	0%	-3%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**2%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**0%**	**0%**

Table 16 illustrates the same changes in Englebright Reservoir release as shown in Table 14 for New Bullards Bar Reservoir. It is assumed that changes in releases from New Bullards Bar Reservoir will flow through Englebright Reservoir without affecting Englebright storage because

of the relatively small storage capacity in Englebright and because Englebright operations are primarily for regulating upstream power peaking releases. Changes in release from Englebright are a smaller percentage of existing conditions releases than changes at New Bullards Bar.

Table 17: Average Monthly Yuba River at Marysville under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	42	80	249	379	321	345	240	313	241	114	93	44	2,462
AN	30	65	122	220	214	270	183	190	150	68	66	39	1,617
BN	34	44	79	118	139	101	132	119	89	50	68	35	1,007
D	29	45	56	63	82	97	75	62	43	33	37	30	651
C	31	40	48	59	50	53	34	35	22	20	20	22	436
All Yrs	**35**	**58**	**130**	**195**	**182**	**195**	**147**	**166**	**126**	**65**	**62**	**35**	**1,396**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
AN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-3%	0%	0%	0%
BN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-2%	-2%	0%	0%
D	0%	0%	0%	3%	0%	0%	0%	0%	0%	-2%	-6%	0%	0%
C	0%	0%	0%	3%	0%	0%	0%	0%	0%	-12%	-4%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**2%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-3%**	**-2%**	**0%**	**0%**

Table 17 shows how changes in Englebright Reservoir releases continue downstream on the Yuba River to Marysville. The following tables show how these changes continue downstream on the Feather and Sacramento Rivers. The No-Project Alternative may reduce Yuba River at Marysville flows in critical year types by approximately twelve percent in July, compared to the existing conditions when flows are increased as Conservation Water is released for transfer.

Table 18: Average Monthly Feather River below Marysville under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	245	284	744	1,106	1,026	1,159	645	786	555	501	265	179	7,496
AN	196	190	334	531	672	740	308	424	370	612	419	185	4,982
BN	241	177	239	355	371	298	240	219	288	599	429	190	3,647
D	199	150	201	197	204	289	173	159	256	528	356	179	2,891
C	193	165	200	155	145	156	113	123	226	388	214	150	2,230
All Yrs	**220**	**205**	**399**	**555**	**553**	**613**	**345**	**402**	**369**	**524**	**328**	**178**	**4,689**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**1%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 18 shows that changes in Feather River flows under the No-Project Alternative are approximately one percent or less of average monthly flows for all months and all year types.

Table 19: Average Monthly Sacramento River at Hood under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	838	1,198	2,713	3,398	3,404	3,201	2,346	1,995	1,433	1,234	949	1,088	23,795
AN	661	931	1,327	2,659	2,829	2,856	1,564	1,362	1,002	1,321	963	799	18,276
BN	736	735	1,089	1,521	1,925	1,514	1,112	918	846	1,323	906	753	13,378
D	654	727	962	1,076	1,277	1,390	806	708	757	1,198	830	657	11,042
C	635	578	721	849	826	805	596	456	690	893	594	520	8,162
All Yrs	**725**	**886**	**1,557**	**2,086**	**2,223**	**2,114**	**1,427**	**1,211**	**1,013**	**1,204**	**866**	**811**	**16,122**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 19 shows how changes in New Bullards Bar Reservoir releases result in changes in Sacramento River flow at Hood. This location is the point where Sacramento River inflow to the Delta is measured. Changes at this location are less than one percent of the average monthly flow for all months and year types. The average annual change across all year types is zero because there is no difference in the volume of water being used in the Sacramento Valley watershed between the existing conditions and the No-Project Alternative.

Table 20: Average Monthly Delta Outflow under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	412	826	2,955	5,266	5,475	5,046	3,101	2,429	1,509	734	335	569	28,657
AN	243	560	1,133	3,006	3,594	3,527	1,843	1,500	798	628	247	225	17,304
BN	276	331	806	1,440	2,146	1,712	1,319	1,004	510	501	261	205	10,512
D	264	393	581	896	1,282	1,486	865	684	368	374	249	186	7,628
C	257	274	369	643	758	812	533	355	310	286	261	179	5,037
All Yrs	**309**	**527**	**1,422**	**2,646**	**3,021**	**2,853**	**1,746**	**1,363**	**809**	**534**	**280**	**315**	**15,825**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	0.0	1.0
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.0	-0.8	0.0	0.0	0.8
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.4	0.2	0.1	-0.3	-0.2	0.0	1.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.1	0.0	0.1	-0.2	-0.6	0.0	1.2
C	0.0	0.0	0.0	1.1	0.2	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.9
All Yrs	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**-0.3**	**-0.2**	**0.0**	**1.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Results presented in Table 20 illustrate that changes in the timing of Sacramento River inflow, created by changes in Yuba River operations, would cause only minor changes in Delta operations. Under Alternative 1 Delta outflow increases slightly, primarily because of increased Yuba River spills of Conservation Water in January. Delta outflow is reduced in July and August relative to the existing conditions by the estimated carriage water requirements for the existing transfers.

Table 21: Average Monthly SWP Delta Export under No-Project Alternative

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	303	367	348	316	293	228	173	169	188	403	401	392	3,579
AN	253	291	320	258	217	126	81	77	151	384	401	357	2,917
BN	296	298	278	214	212	110	67	68	109	403	360	327	2,743
D	238	240	287	204	142	59	40	34	102	396	307	256	2,307
C	218	170	222	174	123	44	26	23	101	270	133	149	1,652
All Yrs	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**138**	**379**	**334**	**310**	**2,778**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	-0.1
AN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.8	0.1	0.0	-0.5
BN	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	-0.3	-1.1	0.0	-1.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	-0.6	-1.5	0.0	-1.8
C	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	-2.2	-0.3	0.0	-2.2
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**-0.7**	**-0.6**	**0.0**	**-1.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Results presented in Table 21 show an average annual decrease of 1,000 acre-feet in Delta exports under Alternative 1 when Conservation Water is not transferred to south-of-Delta SWP contractors. Monthly decreases occur in July and August when transfers occur in the existing conditions.

Alternative 2: BVID Yuba River Service Area Expansion

Under Alternative 2, BVID would expand water service to the *Spring Valley Specific Plan* (SVSP) area using the Conservation Water to help satisfy additional demands created by the build-out of the SVSP. The SVSP, which is located within BVID's Yuba River service area, was approved by the Yuba County Board of Supervisors in 1992 and is currently being entitled. When built out, the SVSP would include approximately 3,500 dwelling units and a 220-acre golf course on 2,500 acres. The estimated annual water demand for the SVSP project at build-out would be approximately 4,000 acre-feet (Yuba County 1992:20 and 71). Policies in the specific plan require that housing in the SVSP use water conservation features and drought-tolerant landscaping (Yuba County 1991:H-3).

The authorized place of use in YCWA's water rights permit does not include most of the parcels within the SVSP area. BVID would use the Conservation Water to serve the SVSP and would

use its YCWA contractual entitlement to serve BVID customers whose lands are within the authorized YCWA place of use.

Increased diversions at the Pumpline Canal can change New Bullards Bar Reservoir operations relative to the existing conditions. Under existing conditions, Conservation Water is temporarily stored in New Bullards Bar Reservoir for transfer when Delta conditions permit. Under Alternative 2, Conservation Water is not stored but passes through New Bullards Bar Reservoir for diversion by BVID. These changes in reservoir operations are summarized in the following tables.

The following tables summarize results from simulation of Alternative 2 and compare results to the existing conditions. Descriptions of the operational changes that create the differences between Alternative 2 and existing conditions are provided after each table.

Table 22: Average Monthly New Bullards Bar Reservoir Release under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	53	60	157	236	196	235	166	236	206	173	149	60	1,927
AN	43	48	81	120	120	171	137	154	165	135	122	55	1,352
BN	51	43	54	72	57	48	89	134	133	118	126	54	979
D	44	41	38	35	29	33	59	107	96	103	96	49	729
C	44	41	41	37	21	21	34	83	72	83	74	39	591
All Yrs	**48**	**48**	**85**	**118**	**99**	**118**	**106**	**156**	**144**	**130**	**119**	**53**	**1,223**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.2	0.0	0.0	-0.2	0.0	0.0	0.0	0.1	0.1	-0.3	0.0	0.1	0.1
AN	0.2	0.0	0.0	-0.2	0.0	0.0	0.3	0.5	0.3	-1.3	0.2	0.2	0.2
BN	0.2	0.0	0.0	-0.3	0.0	0.0	0.5	0.5	0.5	-0.4	-1.2	0.1	0.0
D	0.2	0.0	0.0	-0.2	0.0	0.0	0.5	0.6	0.4	-0.3	-1.7	0.4	-0.1
C	0.2	0.0	0.0	-0.3	0.0	0.0	0.3	0.6	0.4	-2.0	0.1	0.5	-0.3
All Yrs	**0.2**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**0.3**	**0.4**	**0.3**	**-0.7**	**-0.5**	**0.2**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	1%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-1%	0%	0%
D	1%	0%	0%	0%	0%	0%	1%	1%	0%	0%	-2%	1%	0%
C	0%	0%	0%	0%	0%	0%	1%	1%	0%	-2%	-1%	2%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**1%**	**0%**

Table 22 shows how releases from New Bullards Bar Reservoir increase slightly under Alternative 2 in most months and year types as Conservation Water is released as it is conserved, rather than stored in the reservoir for release in July or August. Releases decrease slightly in July and August, relative to the existing conditions, wherein water is released for transfer through the Delta in those months. In wetter year types there may be less change in release during the summer because in these year types through-Delta transfers may not be possible because the Delta remains in surplus conditions throughout the summer. There is a slight decrease in simulated January releases, relative to existing conditions, because New Bullards Bar Reservoir does not release as much surplus water. In years when through-Delta transfers are not possible under existing conditions, Conservation Water may be stored in New Bullards Bar Reservoir and released as surplus in January. However, when Conservation Water is delivered every year to BVID, surplus releases in January are reduced. Additionally, New Bullards Bar Reservoir releases may increase slightly in some years and months to meet minimum Yuba River

flow requirements when Conservation Water is diverted above Marysville. Increases in summer releases to meet minimum flow requirements result in decreases in surplus releases in the following January. Changes in releases are within approximately two percent of the releases under existing conditions.

Table 23: Average Monthly New Bullards Bar Reservoir Storage under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)												
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
W	577	594	650	689	749	773	870	947	924	808	681	638
AN	534	543	557	632	702	773	856	944	891	785	678	634
BN	572	555	557	567	632	714	845	924	881	785	673	629
D	518	509	518	529	596	703	796	822	777	689	603	562
C	539	514	498	493	517	577	623	606	566	492	424	390
All Yrs	**551**	**549**	**569**	**596**	**655**	**719**	**811**	**865**	**827**	**729**	**624**	**583**
Comparison to Existing Conditions (Alternative minus Existing Conditions)												
W	-0.2	-0.2	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	0.1	0.0
AN	-0.2	-0.2	-0.2	0.0	0.0	0.0	-0.3	-0.7	-1.1	0.2	0.1	-0.2
BN	-0.3	-0.3	-0.3	0.0	0.0	0.0	-0.5	-1.0	-1.5	-1.1	0.1	-0.1
D	-0.2	-0.2	-0.2	0.0	0.0	0.0	-0.5	-1.1	-1.5	-1.2	0.5	0.1
C	-0.3	-0.3	-0.3	0.0	0.0	0.0	-0.3	-0.8	-1.2	0.8	0.6	0.2
All Yrs	**-0.2**	**-0.2**	**-0.2**	**0.0**	**0.0**	**0.0**	**-0.3**	**-0.7**	**-1.0**	**-0.3**	**0.3**	**0.0**
Average Percent Change from Existing Conditions												
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 23 shows how changes in reservoir releases presented in Table 22 and described above create changes in New Bullards Bar Reservoir storage.

Table 24: Average Monthly Englebright Release under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	61	83	236	348	292	318	239	371	302	186	152	63	2,652
AN	47	70	118	199	194	250	190	250	211	140	125	59	1,853
BN	54	52	78	108	123	93	142	182	150	122	128	56	1,289
D	49	52	57	57	73	88	92	126	105	105	98	51	953
C	51	49	51	54	45	49	52	94	78	86	75	41	726
All Yrs	**54**	**64**	**125**	**178**	**165**	**180**	**156**	**227**	**187**	**136**	**121**	**55**	**1,647**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.2	0.0	0.0	-0.2	0.0	0.0	0.0	0.1	0.1	-0.3	0.0	0.1	0.1
AN	0.2	0.0	0.0	-0.2	0.0	0.0	0.3	0.5	0.3	-1.3	0.2	0.2	0.2
BN	0.2	0.0	0.0	-0.3	0.0	0.0	0.5	0.5	0.5	-0.4	-1.2	0.1	0.0
D	0.2	0.0	0.0	-0.2	0.0	0.0	0.5	0.6	0.4	-0.3	-1.7	0.4	-0.1
C	0.2	0.0	0.0	-0.3	0.0	0.0	0.3	0.6	0.4	-2.0	0.1	0.5	-0.3
All Yrs	**0.2**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**0.3**	**0.4**	**0.3**	**-0.7**	**-0.5**	**0.2**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
D	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-2%	1%	0%
C	0%	0%	0%	0%	0%	0%	0%	1%	0%	-2%	-1%	2%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**1%**	**0%**

Table 24 shows how the same changes in New Bullards Bar Reservoir releases presented in Table 22 also occur in releases from Englebright Reservoir and represent approximately the same percent change. It is assumed that changes in releases from New Bullards Bar Reservoir will flow through Englebright Reservoir without affecting Englebright storage because of the relatively small storage capacity in Englebright, and because Englebright operations are primarily for regulating upstream power peaking releases.

Table 25: Average Monthly Yuba River at Marysville under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	42	80	249	377	321	345	240	312	241	114	93	43	2,458
AN	30	65	122	219	214	270	183	190	150	68	65	39	1,613
BN	34	44	79	117	139	101	132	118	88	49	67	35	1,004
D	29	45	56	61	82	97	74	62	43	33	37	30	648
C	31	40	48	58	50	53	34	35	22	20	20	22	434
All Yrs	**34**	**58**	**130**	**193**	**182**	**195**	**147**	**166**	**126**	**65**	**62**	**35**	**1,393**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	-0.2	0.0	0.0	-0.3	-0.5	-0.3	-0.9	-0.4	-0.3	-3.0
AN	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	-1.9	-0.3	-0.2	-2.9
BN	-0.1	0.0	0.0	-0.3	0.0	0.0	0.2	-0.2	0.1	-0.9	-1.6	-0.3	-3.1
D	0.0	0.0	0.0	-0.2	0.0	0.0	0.2	0.0	0.0	-0.9	-2.2	-0.1	-3.2
C	-0.1	0.0	0.0	-0.3	0.0	0.0	-0.1	-0.1	0.0	-2.5	-0.3	0.0	-3.4
All Yrs	**0.0**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**0.0**	**-0.2**	**-0.1**	**-1.3**	**-1.0**	**-0.2**	**-3.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	-4%	0%	-1%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-2%	-1%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-6%	0%	-1%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	-12%	-4%	0%	-1%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-4%**	**-2%**	**-1%**	**0%**

Table 25 presents a summary of Yuba River at Marysville flows under Alternative 2, and changes relative to the existing conditions. Average annual flow at Marysville decreases by the total amount of the Conservation Water because it is assumed that this water is diverted by BVID and consumed within BVID. The largest changes in flow, both in volume and percent of existing flow, occur in July and August of drier year types when the Conservation Water is released for transfer in the existing conditions. There are smaller changes from April through June in drier year types, compared to wetter year types, because New Bullards Bar Reservoir is often releasing to meet the Yuba River minimum flow requirements at Marysville under these conditions. This requires an increased release from New Bullards Bar Reservoir (as shown in Table 22) to allow for increased diversions by BVID at the Pumpline Canal. Small increases occur in April and June of some year types due to how flow in excess of minimum Yuba River flow requirements is regulated in New Bullards Bar Reservoir under existing conditions.

The same changes presented in Table 25 continue downstream into the Delta, as shown in the following tables. These changes represent a smaller percentage of existing flows downstream of the Yuba River.

Table 26: Average Monthly Feather River below Marysville under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	245	284	744	1,105	1,026	1,159	645	785	555	501	264	179	7,492
AN	196	190	334	530	672	740	308	423	370	612	418	185	4,978
BN	241	177	239	354	371	298	239	219	288	599	428	190	3,643
D	199	150	201	195	204	289	173	159	256	528	356	179	2,888
C	193	165	200	154	145	156	113	123	226	388	214	150	2,228
All Yrs	**219**	**205**	**399**	**554**	**553**	**613**	**345**	**401**	**369**	**523**	**328**	**177**	**4,686**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	-0.2	0.0	0.0	-0.3	-0.5	-0.3	-0.9	-0.4	-0.3	-3.0
AN	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	-1.9	-0.3	-0.2	-2.9
BN	-0.1	0.0	0.0	-0.3	0.0	0.0	0.2	-0.2	0.1	-0.9	-1.6	-0.3	-3.1
D	0.0	0.0	0.0	-0.2	0.0	0.0	0.2	0.0	0.0	-0.9	-2.2	-0.1	-3.2
C	-0.1	0.0	0.0	-0.3	0.0	0.0	-0.1	-0.1	0.0	-2.5	-0.3	0.0	-3.4
All Yrs	**0.0**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**0.0**	**-0.2**	**-0.1**	**-1.3**	**-1.0**	**-0.2**	**-3.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 27: Average Monthly Sacramento River at Hood under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	838	1,198	2,713	3,396	3,404	3,201	2,346	1,994	1,433	1,233	948	1,087	23,791
AN	661	931	1,327	2,658	2,829	2,856	1,564	1,361	1,002	1,321	963	799	18,273
BN	735	735	1,089	1,520	1,925	1,514	1,112	918	846	1,322	905	753	13,375
D	654	727	962	1,074	1,277	1,390	806	708	757	1,198	830	657	11,039
C	634	578	721	847	826	805	596	456	690	893	594	520	8,160
All Yrs	**724**	**886**	**1,557**	**2,085**	**2,223**	**2,114**	**1,427**	**1,211**	**1,012**	**1,204**	**865**	**811**	**16,119**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	-0.2	0.0	0.0	-0.3	-0.5	-0.3	-0.9	-0.4	-0.3	-3.0
AN	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	-1.9	-0.3	-0.2	-2.9
BN	-0.1	0.0	0.0	-0.3	0.0	0.0	0.2	-0.2	0.1	-0.9	-1.6	-0.3	-3.1
D	0.0	0.0	0.0	-0.2	0.0	0.0	0.2	0.0	0.0	-0.9	-2.2	-0.1	-3.2
C	-0.1	0.0	0.0	-0.3	0.0	0.0	-0.1	-0.1	0.0	-2.5	-0.3	0.0	-3.4
All Yrs	**0.0**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**0.0**	**-0.2**	**-0.1**	**-1.3**	**-1.0**	**-0.2**	**-3.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 26 and Table 27 show the same changes in Yuba River flows are also present downstream. It is assumed that there will be no change in the operation of upstream reservoirs as a result of such small changes. Average annual Sacramento River Delta inflow is reduced by the volume of the Conservation Water diverted and used within BVID.

Table 28: Average Monthly Delta Outflow under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	412	826	2,955	5,265	5,475	5,046	3,101	2,429	1,509	734	335	569	28,654
AN	243	560	1,133	3,005	3,594	3,527	1,843	1,500	797	628	247	225	17,302
BN	276	331	806	1,439	2,146	1,712	1,319	1,004	510	501	261	205	10,510
D	264	393	581	894	1,282	1,486	864	684	368	374	249	186	7,626
C	257	274	369	642	758	812	533	355	310	286	261	179	5,035
All Yrs	**309**	**527**	**1,422**	**2,645**	**3,021**	**2,853**	**1,746**	**1,363**	**808**	**534**	**279**	**315**	**15,823**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	-0.2	0.0	0.0	-0.3	-0.5	-0.3	-0.4	-0.2	-0.3	-2.1
AN	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	-0.1	-0.8	0.0	0.0	-1.3
BN	0.0	0.0	0.0	-0.3	0.0	0.0	0.2	-0.1	0.0	-0.3	-0.2	0.0	-0.7
D	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.1	-0.2	-0.6	0.0	-1.0
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-0.6
All Yrs	**0.0**	**0.0**	**0.0**	**-0.2**	**0.0**	**0.0**	**-0.1**	**-0.2**	**-0.1**	**-0.4**	**-0.2**	**-0.1**	**-1.3**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 28 summarizes average monthly Delta outflow under Alternative 2 and changes in Delta outflow relative to existing conditions. Results presented in Table 28 and Table 29 illustrate how changes in Delta inflow are accounted for in Delta operations. Approximately 40 percent (1,300 acre-feet) of the total reduction in Delta inflow summarized in Table 27 occurs when the Delta is in surplus and therefore reduces Delta outflow.

Table 29: Average Monthly SWP Delta Export under Expand BVID Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	302	367	348	316	293	228	173	169	188	403	401	392	3,578
AN	253	291	320	258	217	126	81	77	151	384	400	357	2,915
BN	296	298	278	214	212	110	67	68	109	403	360	326	2,742
D	238	240	287	204	142	59	40	34	102	396	307	256	2,306
C	218	170	222	174	123	44	26	23	101	270	133	149	1,652
All Yrs	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**137**	**379**	**334**	**310**	**2,777**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	-0.2	-0.1	-0.9
AN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-1.0	-0.3	-0.3	-1.6
BN	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	-0.7	-1.4	-0.3	-2.4
D	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-0.7	-1.6	-0.1	-2.2
C	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-2.2	-0.3	0.0	-2.7
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.9**	**-0.8**	**-0.1**	**-1.8**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 29 accounts for the balance of the reduction in Delta inflow and summarizes the reductions in Delta exports that occur under Alternative 2. Reductions in Delta exports are presented as

reductions to Banks pumping, but these reductions would be shared by both the CVP and SWP under the COA.

Alternative 3: North-of-Delta Irrigation Season Transfer

Under Alternative 3, BVID would enter into temporary water transfer agreements each year with a transferee whose point of diversion is located between Marysville on the Yuba River and the Sacramento River at Hood. Potential transferees include the Freeport Regional Water Authority (FRWA), Davis-Woodland Water Supply Project Authority (DWWSPA), East Bay Municipal Utility District (EBMUD), or Sacramento County Water Agency (SCWA).

Under this alternative, BVID would provide the 3,100 acre-feet of Conservation Water on an irrigation season pattern, as it is conserved. The water would flow from the historical point of diversion on the North Yuba River, through the Yuba River, and past Marysville. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

Increased diversions between Marysville on the Yuba River and Hood on the Sacramento River can slightly modify New Bullards Bar Reservoir operations relative to the existing conditions. Under existing conditions, Conservation Water is temporarily stored in New Bullards Bar Reservoir for transfer when Delta conditions permit. Under this alternative Conservation Water is not stored but passes through New Bullards Bar Reservoir for diversion downstream. Changes in New Bullards Bar Reservoir operations and flow changes in the Yuba, Feather, and Sacramento Rivers are summarized in the following tables.

The following tables summarize results from simulation of this alternative and compare results to existing conditions. Descriptions of the operational changes that create the differences between Alternative 3 and existing conditions are provided after each table.

Table 30: Average Monthly New Bullards Bar Release under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	53	60	157	237	196	235	166	236	206	173	149	60	1,928
AN	42	48	81	121	120	171	137	154	164	135	122	55	1,352
BN	51	43	54	73	57	48	89	134	133	118	126	54	979
D	44	41	38	37	29	33	59	106	95	102	96	48	728
C	44	41	41	39	21	21	34	82	72	83	73	39	590
All Yrs	**48**	**48**	**85**	**119**	**99**	**118**	**106**	**155**	**143**	**129**	**119**	**53**	**1,223**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	6%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	4%	0%	0%	1%	0%	0%	-1%	-1%	0%	0%
D	0%	0%	0%	8%	0%	0%	0%	0%	0%	-1%	-2%	0%	0%
C	0%	0%	0%	6%	1%	0%	0%	0%	0%	-3%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**4%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**0%**	**0%**

Table 30 summarizes New Bullards Bar Reservoir releases under Alternative 3, and changes in release relative to existing conditions. The largest changes in release occur during months when Conservation Water is transferred under existing conditions. Releases in these months decrease under Alternative 3 because Conservation Water is transferred on an irrigation season pattern, rather than a pattern to facilitate Delta exports. There are small increases in some months, relative to existing conditions, when Conservation Water is stored in New Bullards Bar Reservoir to facilitate Delta exports. Increased releases in January under Alternative 3 occur because transfers in drier year types under existing conditions come out of reservoir storage, thereby reducing surplus releases in January of subsequent years. Under Alternative 3 Conservation Water flows through New Bullards Bar Reservoir and is released as it is conserved. Released Conservation Water may satisfy a portion of the minimum flow requirement on the Yuba River at Marysville and then be diverted downstream for transfer. This operation does not change New Bullards Bar Reservoir releases in these drier year types, but results in higher surplus releases in the following January, relative to existing conditions.

Table 31: Average Monthly New Bullards Bar Reservoir Storage under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)												
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
W	578	596	652	689	749	773	870	947	925	808	682	638
AN	536	544	558	632	702	773	856	944	891	786	678	635
BN	573	556	558	567	632	714	845	924	881	786	673	630
D	520	511	520	529	596	703	796	823	778	691	605	564
C	540	516	500	493	517	577	624	607	568	494	426	392
All Yrs	**553**	**551**	**571**	**596**	**655**	**719**	**811**	**866**	**828**	**729**	**625**	**584**
Comparison to Existing Conditions (Alternative minus Existing Conditions)												
W	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4
AN	1.0	1.0	1.0	0.0	0.0	0.0	-0.2	-0.5	-0.7	0.9	0.9	0.8
BN	0.9	0.9	0.9	0.0	0.0	0.0	-0.5	-0.7	-1.0	-0.4	0.8	0.8
D	1.7	1.7	1.7	0.0	0.0	0.0	-0.3	-0.4	-0.5	0.3	2.4	2.4
C	1.6	1.6	1.6	0.2	0.0	0.0	0.0	0.0	0.0	2.5	2.8	2.8
All Yrs	**1.3**	**1.3**	**1.3**	**0.0**	**0.0**	**0.0**	**-0.2**	**-0.3**	**-0.4**	**0.6**	**1.4**	**1.3**
Average Percent Change from Existing Conditions												
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 31 shows New Bullards Bar Reservoir end-of-month storage under existing conditions and with Alternative 3 and shows the changes in storage that result from the changes in release presented in Table 30.

Table 32: Average Monthly Englebright Reservoir Release under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	61	83	236	350	292	318	239	371	302	186	152	63	2,653
AN	47	70	118	200	194	250	190	249	211	140	125	59	1,853
BN	54	52	78	109	123	93	142	182	150	122	127	55	1,289
D	49	52	57	59	73	88	92	126	105	105	97	50	952
C	51	49	51	55	45	49	52	94	78	86	75	41	725
All Yrs	**53**	**64**	**125**	**180**	**165**	**180**	**156**	**226**	**187**	**136**	**121**	**55**	**1,647**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
BN	0%	0%	0%	2%	0%	0%	0%	0%	0%	-1%	-1%	0%	0%
D	0%	0%	0%	4%	0%	0%	0%	0%	0%	-1%	-2%	0%	0%
C	0%	0%	0%	3%	0%	0%	0%	0%	0%	-3%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**2%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-1%**	**-1%**	**0%**	**0%**

Table 32 shows how the same changes in New Bullards Bar Reservoir releases presented in Table 32 also occur in releases from Englebright Reservoir and represent approximately the same percent change. It is assumed that changes in releases from New Bullards Bar Reservoir

will flow through Englebright Reservoir without affecting Englebright storage because of the relatively small storage capacity in Englebright, and because Englebright operations are primarily for regulating upstream power peaking releases.

Table 33: Average Monthly Yuba River at Marysville under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	42	80	249	379	321	345	240	313	241	114	93	44	2,462
AN	30	65	122	220	214	270	183	190	150	68	66	39	1,617
BN	34	44	79	118	139	101	132	119	89	50	68	35	1,007
D	29	45	56	63	82	97	75	62	43	33	37	30	651
C	31	40	48	59	50	53	34	35	22	20	20	22	436
All Yrs	**35**	**58**	**130**	**195**	**182**	**195**	**147**	**166**	**126**	**65**	**62**	**35**	**1,396**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
AN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-3%	0%	0%	0%
BN	0%	0%	0%	1%	0%	0%	0%	0%	0%	-2%	-2%	0%	0%
D	0%	0%	0%	3%	0%	0%	0%	0%	0%	-2%	-6%	0%	0%
C	0%	0%	0%	3%	0%	0%	0%	0%	0%	-12%	-4%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**2%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-3%**	**-2%**	**0%**	**0%**

Table 33 contains average monthly flow in the Yuba River at Marysville for Alternative 3 compared to existing conditions. Although percent change in flow from existing conditions is different due to the amount of flow, changes in Yuba River flow below Englebright Reservoir and at Marysville are the same.

Table 34: Average Monthly Feather River below Marysville under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	245	284	744	1,106	1,026	1,159	645	786	555	501	265	179	7,496
AN	196	190	334	531	672	740	308	424	370	612	419	185	4,982
BN	241	177	239	355	371	298	240	219	288	599	429	190	3,647
D	199	150	201	197	204	289	173	159	256	528	356	179	2,891
C	193	165	200	155	145	156	113	123	226	388	214	150	2,230
All Yrs	**220**	**205**	**399**	**555**	**553**	**613**	**345**	**402**	**369**	**524**	**328**	**178**	**4,689**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.1	0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.3	0.2	-1.6	0.1	0.1	0.3
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.2	0.3	-0.6	-1.3	0.1	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.1	-0.8	-2.1	0.0	-0.7
C	0.0	0.0	0.0	1.4	0.2	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-1.3
All Yrs	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**-1.0**	**-0.7**	**0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**1%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 34 contains changes in Feather River flow below Marysville. Changes in Feather River flow are identical to changes in Yuba River flow, however percent change from existing conditions is lower due to much higher flows in the Feather River.

Table 35: Average Monthly Sacramento River at Hood under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	838	1,198	2,713	3,398	3,404	3,201	2,346	1,994	1,433	1,233	948	1,087	23,792
AN	661	931	1,327	2,659	2,829	2,856	1,564	1,361	1,002	1,321	963	799	18,273
BN	735	735	1,089	1,521	1,925	1,514	1,112	918	846	1,322	905	753	13,375
D	654	727	962	1,076	1,277	1,390	806	708	756	1,198	830	657	11,039
C	634	578	721	849	826	805	595	456	690	892	593	520	8,159
All Yrs	**724**	**886**	**1,557**	**2,086**	**2,223**	**2,114**	**1,426**	**1,210**	**1,012**	**1,203**	**865**	**810**	**16,119**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	-0.2	0.0	0.0	1.2	0.0	0.0	-0.3	-0.6	-0.4	-1.0	-0.5	-0.4	-2.2
AN	-0.3	0.0	0.0	1.0	0.0	0.0	-0.1	-0.4	-0.2	-2.2	-0.4	-0.4	-2.8
BN	-0.3	0.0	0.0	0.9	0.0	0.0	0.2	-0.5	-0.1	-1.1	-1.7	-0.4	-3.0
D	-0.2	0.0	0.0	1.7	0.0	0.0	0.0	-0.6	-0.3	-1.4	-2.6	-0.4	-3.8
C	-0.3	0.0	0.0	1.4	0.2	0.0	-0.3	-0.6	-0.4	-3.1	-0.8	-0.5	-4.4
All Yrs	**-0.2**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**-0.1**	**-0.6**	**-0.3**	**-1.6**	**-1.2**	**-0.4**	**-3.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 35 contains average monthly flows in the Sacramento River at Hood. The average annual change in flow is equal to the diversion of transferred Conservation Water upstream from the Delta (3,100 acre-feet). Decreases in flow occur from April through October because transferred Conservation Water is diverted upstream of this location. The relatively larger flow decreases in July and August occur because releases from New Bullards Bar Reservoir are not made to support transfer of Conservation Water through the Delta during these months.

Table 36: Average Monthly Delta Outflow under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	412	826	2,955	5,266	5,475	5,046	3,101	2,428	1,509	734	335	569	28,655
AN	243	560	1,133	3,006	3,594	3,527	1,843	1,500	797	628	247	225	17,303
BN	276	331	806	1,440	2,146	1,712	1,319	1,004	510	501	261	205	10,511
D	264	393	581	896	1,282	1,486	864	684	368	374	249	186	7,627
C	257	274	369	643	758	812	533	354	310	286	261	179	5,036
All Yrs	**309**	**527**	**1,422**	**2,646**	**3,021**	**2,853**	**1,746**	**1,363**	**808**	**534**	**279**	**315**	**15,824**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	1.2	0.0	0.0	-0.3	-0.6	-0.3	-0.4	-0.2	-0.3	-0.9
AN	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-0.2	-0.2	-0.8	0.0	0.0	-0.4
BN	0.0	0.0	0.0	0.9	0.0	0.0	0.1	-0.4	0.0	-0.3	-0.2	0.0	0.1
D	0.0	0.0	0.0	1.7	0.0	0.0	-0.1	-0.5	0.0	-0.2	-0.6	-0.1	0.1
C	0.0	0.0	0.0	1.1	0.2	0.0	-0.1	-0.4	-0.1	-0.3	-0.2	0.0	0.0
All Yrs	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**	**0.0**	**-0.1**	**-0.5**	**-0.2**	**-0.4**	**-0.3**	**-0.1**	**-0.3**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Results presented in Table 36 and Table 37 summarize how changes in Delta inflow affect Delta operations under Alternative 3. Reductions in Delta inflow that occur when the Delta is in surplus conditions reduce Delta outflow, which occurs more often in wetter year types.

Table 37: Average Monthly SWP Delta Export under North-of-Delta Irrigation Season Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	302	367	348	316	293	228	173	169	188	403	401	392	3,578
AN	253	291	320	258	217	126	81	77	151	384	400	357	2,915
BN	296	298	278	214	212	110	67	68	109	402	360	326	2,741
D	238	240	287	204	142	59	40	34	102	395	306	256	2,305
C	217	170	222	174	123	44	26	23	101	269	133	148	1,650
All Yrs	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**137**	**379**	**334**	**310**	**2,776**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	-0.3	-0.1	-1.3
AN	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-1.3	-0.4	-0.3	-2.5
BN	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.9	-1.5	-0.4	-3.1
D	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.3	-1.1	-2.0	-0.4	-3.9
C	-0.2	0.0	0.0	0.3	0.0	0.0	-0.2	-0.2	-0.3	-2.7	-0.5	-0.5	-4.4
All Yrs	**-0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.1**	**-1.2**	**-0.9**	**-0.3**	**-2.8**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	0%	0%	0%	-1%	-1%	0%	-1%	-1%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 37 contains SWP Delta exports under Alternative 3, and changes in Delta exports. Exports are lower under Alternative 3 because Conservation Water is not exported as it is under existing conditions. Lower exports are also due to diversion of conserved water upstream from the Delta in years when it can not be exported under existing conditions. The average annual reduction in Delta inflow of 3,100 acre-feet of Conservation Water is accounted for between changes in Delta

outflow (10 percent) and Delta exports (90 percent). Reductions in Delta exports are presented as reductions to Banks pumping, but these reductions would be shared by both the CVP and SWP under the COA.

Alternative 4: North-of-Delta Transfer – Two-Week Delivery Schedule

Under the North-of-Delta Transfer Alternative (Alternative 4), BVID would enter into temporary short-term transfer agreements each year with FRWA, EBMUD, DWWSPA, or SCWA to transfer 3,100 acre-feet of Conservation Water to their respective service areas. The Conservation Water would be transferred only during years when sufficient supplies were available for BVID to both make full deliveries to its Yuba River service area and transfer Conservation Water.

This alternative assumes that BVID would provide the 3,100 acre-feet of Conservation Water over a period of 2 weeks between July 1 and October 31 of each year. The Conservation Water would be temporarily stored by YCWA in New Bullards Bar Reservoir at the rate that it is conserved during the irrigation season, and released into the North Yuba River from New Bullards Bar Reservoir under agreements with YCWA and pursuant to river-management procedures established by the Yuba Accord. The Conservation Water would flow through Englebright Reservoir and down the lower Yuba River to the transferee's point of diversion.

Alternative 4 is similar to the existing conditions in many years. However, Alternative 4 is not dependent on the Delta being in balanced conditions or available export capacity and can therefore occur every year. It was assumed for this analysis that these transfers would occur every year in July. Changes in reservoir operations and flows would be similar in magnitude if the transfers under Alternative 4 where to occur in a different month between July and October.

The following tables summarize results from simulation of this alternative and compare results to the existing conditions. Descriptions of operational changes that create the differences between Alternative 4 and existing conditions are provided after each table.

Table 38: Average Monthly New Bullards Bar Release under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	53	60	157	236	196	235	166	236	205	175	148	60	1,927
AN	42	48	81	120	120	171	137	154	164	138	122	55	1,352
BN	51	43	54	72	57	48	88	134	132	121	125	54	979
D	44	41	38	35	29	33	59	106	95	105	96	48	729
C	44	41	41	37	21	21	34	82	72	86	73	39	591
All Yrs	**47**	**48**	**85**	**118**	**99**	**118**	**106**	**155**	**143**	**132**	**118**	**53**	**1,223**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	1.6	-1.0	-0.2	0.0
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	1.1	-0.5	-0.1	0.0
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	2.4	-1.8	0.0	0.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	-2.2	0.0	0.0
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.6	-0.3	0.0	0.0
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**1.6**	**-1.2**	**-0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	-1%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	-2%	0%	0%
C	0%	0%	0%	-1%	0%	0%	0%	0%	0%	4%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**2%**	**-1%**	**0%**	**0%**

Table 38 presents average monthly New Bullards Bar Reservoir releases for Alternative 4 and change in release relative to existing conditions. Releases increase in July of all year types because it is assumed Conservation Water is transferred each year in July. Releases decrease April through June and August and September of wetter year types, relative to existing conditions, because Conservation Water is stored for transfer in July of these years under Alternative 4. During wetter year types under existing conditions water cannot be transferred through the Delta because the Delta remains in surplus conditions throughout the potential transfer period. Releases decrease in August of all year types because under existing conditions transfers through the Delta also occur in August. There may be a small decrease in surplus January releases in some drier year types due to a reduction in surplus releases under Alternative 4. This occurs because transfers are made from New Bullards Bar Reservoir storage in the previous year under Alternative 4, but such transfers would not occur each year under existing conditions due to constraints on Delta exports.

Table 39: Average Monthly New Bullards Bar Reservoir Storage under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)												
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
W	577	594	651	689	749	773	870	948	925	807	681	638
AN	535	543	557	632	702	773	857	945	892	784	678	634
BN	572	555	557	567	632	714	846	925	883	785	673	629
D	518	509	518	529	596	703	797	823	779	688	602	562
C	539	514	498	493	517	577	624	607	568	490	423	389
All Yrs	**551**	**550**	**569**	**596**	**655**	**719**	**812**	**866**	**829**	**727**	**624**	**583**
Comparison to Existing Conditions (Alternative minus Existing Conditions)												
W	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	-1.2	-0.2	0.0
AN	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	-0.6	-0.1	0.0
BN	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.5	-1.8	0.0	0.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	0.0	0.0
C	-0.3	-0.3	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	-0.3	-0.3
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	**0.3**	**-1.4**	**-0.1**	**-0.1**
Average Percent Change from Existing Conditions												
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 39 presents average end of month storage in New Bullards Bar Reservoir and changes in storage relative to existing conditions. Changes in storage reflect the changes in release presented in Table 38.

Table 40: Average Monthly Englebright Reservoir Release under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	61	83	236	348	292	318	238	371	302	187	151	63	2,652
AN	47	70	118	199	194	250	189	249	210	143	125	58	1,852
BN	54	52	78	108	123	93	141	182	149	125	127	55	1,289
D	49	52	57	57	73	88	92	126	104	108	97	50	953
C	51	49	51	54	45	49	52	94	78	89	75	41	726
All Yrs	**53**	**64**	**125**	**178**	**165**	**180**	**155**	**226**	**186**	**138**	**120**	**55**	**1,647**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	1.6	-1.0	-0.2	0.0
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	1.1	-0.5	-0.1	0.0
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	2.4	-1.8	0.0	0.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	-2.2	0.0	0.0
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.6	-0.3	0.0	0.0
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**1.6**	**-1.2**	**-0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	-1%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	-2%	0%	0%
C	0%	0%	0%	-1%	0%	0%	0%	0%	0%	2%	-2%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**2%**	**-1%**	**0%**	**0%**

Table 40 presents Englebright Reservoir releases under Alternative 4 and change in release relative to existing conditions. The same changes in release from New Bullards Bar Reservoir occur at Englebright Reservoir. It is assumed that changes in releases from New Bullards Bar Reservoir will flow through Englebright Reservoir without affecting Englebright storage because of the relatively small storage capacity in Englebright, and because Englebright operations are

primarily for regulating upstream power peaking releases. These same changes continue downstream on the Yuba and Feather Rivers as shown in Table 41 and Table 42.

Table 41: Average Monthly Yuba River at Marysville under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	42	80	249	378	321	345	240	313	241	116	92	43	2,461
AN	30	65	122	219	214	270	182	190	150	71	65	39	1,616
BN	34	44	79	117	139	101	131	118	88	53	67	35	1,007
D	29	45	56	61	82	97	74	62	43	36	37	30	652
C	31	40	48	58	50	53	34	35	22	23	20	22	437
All Yrs	**34**	**58**	**130**	**194**	**182**	**195**	**146**	**166**	**126**	**67**	**61**	**35**	**1,396**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	1.6	-1.0	-0.2	0.0
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	1.1	-0.5	-0.1	0.0
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	2.4	-1.8	0.0	0.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	-2.2	0.0	0.0
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.6	-0.3	0.0	0.0
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**1.6**	**-1.2**	**-0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	-2%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	-6%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	-4%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**4%**	**-3%**	**0%**	**0%**

Table 42: Average Monthly Feather River below Marysville under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	245	284	744	1,105	1,026	1,159	645	786	555	503	264	179	7,495
AN	196	190	334	530	672	740	308	423	370	615	418	185	4,981
BN	241	177	239	354	371	298	239	219	288	602	428	190	3,647
D	199	150	201	195	204	289	173	159	256	531	356	179	2,891
C	193	165	200	154	145	156	113	123	226	391	214	150	2,232
All Yrs	**219**	**205**	**399**	**554**	**553**	**613**	**345**	**401**	**369**	**526**	**327**	**177**	**4,689**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	1.6	-1.0	-0.2	0.0
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	1.1	-0.5	-0.1	0.0
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	2.4	-1.8	0.0	0.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	-2.2	0.0	0.0
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.6	-0.3	0.0	0.0
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**1.6**	**-1.2**	**-0.1**	**0.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 43: Average Monthly Sacramento River at Hood under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	838	1,198	2,713	3,396	3,404	3,201	2,346	1,995	1,433	1,232	948	1,087	23,791
AN	661	931	1,327	2,658	2,829	2,856	1,564	1,361	1,002	1,321	963	799	18,273
BN	736	735	1,089	1,520	1,925	1,514	1,111	918	846	1,322	905	753	13,375
D	654	727	962	1,074	1,277	1,390	806	708	757	1,198	830	657	11,040
C	635	578	721	847	826	805	596	456	690	893	594	520	8,161
All Yrs	**724**	**886**	**1,557**	**2,085**	**2,223**	**2,114**	**1,426**	**1,211**	**1,012**	**1,204**	**865**	**811**	**16,119**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	-1.5	-1.0	-0.2	-3.1
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	-2.0	-0.5	-0.1	-3.1
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	-0.7	-1.8	0.0	-3.1
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9	-2.2	0.0	-3.1
C	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	-2.5	-0.3	0.0	-3.1
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**-1.5**	**-1.2**	**-0.1**	**-3.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 43 presents average monthly flow of the Sacramento River at Hood under Alternative 4 and changes in flow relative to existing conditions. The average annual change is equal to the 3,100 acre-feet of transferred Conservation Water. Reductions outside of July are similar to those presented at locations upstream of the point of diversion for transfer. Reductions in July occur because it is assumed that the transfer occurs every year in July.

Table 44: Average Monthly Delta Outflow under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	412	826	2,955	5,265	5,475	5,046	3,101	2,429	1,509	734	334	569	28,655
AN	243	560	1,133	3,005	3,594	3,527	1,843	1,500	797	628	247	225	17,302
BN	276	331	806	1,439	2,146	1,712	1,318	1,004	510	501	261	205	10,510
D	264	393	581	894	1,282	1,486	864	684	368	374	249	186	7,626
C	257	274	369	642	758	812	533	355	310	286	261	179	5,035
All Yrs	**309**	**527**	**1,422**	**2,645**	**3,021**	**2,853**	**1,746**	**1,363**	**808**	**534**	**279**	**315**	**15,823**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	-0.6	-0.4	-0.1	-1.4
AN	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.8	0.0	0.0	-1.3
BN	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	-0.3	-0.2	0.0	-1.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.6	0.0	-0.8
C	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-0.6
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**-0.4**	**-0.3**	**0.0**	**-1.1**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 44 presents average monthly Delta outflow under Alternative 4 and changes in outflow relative to existing conditions. Reductions in Delta inflow from April through September of wetter year types result in reductions in Delta outflow because the Delta is typically in surplus

conditions in these months of wetter years. Approximately 1,100 acre-feet (35 percent) of the 3,100 acre-feet of average annual reduction in Delta inflow would occur when the Delta is in surplus, and therefore reduce Delta outflow.

Table 45: Average Monthly SWP Delta Export under North-of-Delta Transfer Alternative and Comparison with Existing Conditions

Average by Year Type (1,000 acre-feet)													
Yr Type	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
W	302	367	348	316	293	228	173	169	188	402	400	392	3,578
AN	253	291	320	258	217	126	81	77	151	384	400	357	2,915
BN	296	298	278	214	212	110	67	68	109	403	360	327	2,742
D	238	240	287	204	142	59	40	34	102	396	307	256	2,306
C	218	170	222	174	123	44	26	23	101	270	133	149	1,652
All Yrs	**268**	**287**	**300**	**245**	**210**	**129**	**91**	**87**	**137**	**379**	**334**	**310**	**2,777**
Comparison to Existing Conditions (Alternative minus Existing Conditions)													
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	-0.6	0.0	-1.7
AN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-0.5	-0.1	-1.8
BN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	-1.6	-0.1	-2.2
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	-1.7	0.0	-2.3
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	-0.3	0.0	-2.5
All Yrs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-1.0**	**-0.9**	**0.0**	**-2.0**
Average Percent Change from Existing Conditions													
W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
All Yrs	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Table 45 contains SWP Delta exports under Alternative 4 and changes in Delta exports relative to existing conditions. Exports are lower in Alternative 4 because Conservation Water is not exported as it is under existing conditions. Lower exports are also due to diversion of conserved water upstream from the Delta in years when it can not be exported under existing conditions. Reductions in Delta exports are presented as reductions to Banks pumping, but these reductions would be shared by both the CVP and SWP under the COA.

References

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ATTACHMENT 1: CalSim II Common Assumptions for Existing and Future No Action Conditions

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
Planning horizon	2004[a]	2030[a]	Same
Demarcation date	June 1, 2004[a]	Same	Same
Period of simulation	82 years (1922–2003)	Same	Same
HYDROLOGY			
Level of development	2005 level[b]	2030 level[c]	Same
Sacramento Valley (excluding American River)			
CVP	Land-use based, limited by contract amounts[d]	Same	Same
SWP (FRSA)	Land-use based, limited by contract amounts[e]	Same	Same
Nonproject	Land-use based	Same	Same
Federal refuges	Recent historical Level 2 deliveries[f]	Firm Level 2 water needs[f]	Same
American River			
Water rights	2004[g]	Sacramento Area Water Forum[g,h]	Same
CVP	2004[g]	Sacramento Area Water Forum (PCWA modified)[g,h]	Same
PCWA	No CVP contract water supply	35,000 AF CVP contract supply diverted at the new American River PCWA Pump Station	Same
San Joaquin River[i]			
Friant Unit	Limited by contract amounts, based on current allocation policy	Same	Same
Lower Basin	Land-use based, based on district-level operations and constraints	Same	Same
Stanislaus River	Land-use based, based on New Melones IOP[j]	Same	Same

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
South of Delta (CVP/SWP project facilities)			
CVP	Demand based on contracts amounts[d]	Same	Same
Contra Costa Water District	124,000 AF CVP contract supply and water rights[k]	195,000 AF CVP contract supply and water rights[k]	Same
SWP	Demand varies based pattern used for 2004 OCAP Today studies; Table A transfers that occurred in 2005 and 2006 are not included	Demand based on full Table A amounts[e,l]	Same
Article 56	Based on 2002–2006 contractor requests	Same	Same
Article 21	MWD demand up to 100,000 AF/month from December to March, total of other demands up to 84,000 AF/month in all months[e,l]	MWD demand unlimited but subject to capacity to convey and deliver; KCWA demand of up to 2,555 cfs; others same as existing	Same
Federal refuges	Recent historical Level 2 deliveries[f]	Firm Level 2 water needs[f]	Same
FACILITIES			
Systemwide	Existing facilities[a]	Same	Same
Sacramento Valley			
Shasta Lake	Existing, 4,552,000 AF capacity	Same	Same
Colusa Basin	Existing conveyance and storage facilities	Same	Same
Upper American River	PCWA American River pump station not included	PCWA American River pump station included	Same
Lower Sacramento River	Freeport Regional Water Project not included	Freeport Regional Water Project included	Same

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
Delta Region			
SWP Banks Pumping Plant	6,680 cfs capacity[a]	Same	8,500 cfs capacity[a]
CVP C.W. "Bill" Jones Pumping Plant (Tracy PP)	4,200 cfs plus diversions upstream of DMC constriction	4,600 cfs capacity in all months (allowed for by the Delta-Mendota Canal–California Aqueduct Intertie)	Same
Los Vaqueros Reservoir	Existing storage capacity, 100,000 AF, (Alternative Intake Project not included)	Existing storage capacity, 100,000 AF; Alternate Intake Project included[o]	Same
San Joaquin River			
Millerton Lake (Friant Dam)	Existing, 520,000 AF capacity	Same	Same
South of Delta (CVP/SWP project facilities)			
South Bay Aqueduct Enlargement	None	430 cfs capacity from junction with California Aqueduct to Alameda County FC&WSD Zone 7 diversion point	Same
California Aqueduct East Branch Enlargement	None	None	Same
WATER MANAGEMENT ACTIONS (CALFED)			
Water Transfer Supplies (available long term program)			
Phase 8[n]	None	Supplies up to 185,000 AF/yr from new groundwater substitution, with 60 percent going to SWP and 40 percent to CVP[p]	Same
Lower Yuba River Accord	Not included	Not included	Same
REGULATORY STANDARDS			
Trinity River			
Minimum flow below Lewiston Dam	Trinity EIS Preferred Alternative (369,000–815,000 TF/year)	Same	Same
Trinity Reservoir end-of-September minimum storage	Trinity EIS Preferred Alternative (600,000 AF as able)	Same	Same

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
Clear Creek			
Minimum flow below Whiskeytown Dam	Downstream water rights, 1963 Reclamation Proposal to USFWS and National Park Service, and USFWS discretionary use of CVPIA 3406(b)(2)	Same	Same
Upper Sacramento River			
Shasta Lake end-of-September minimum storage	SWRCB WR 1993 Winter-Run Biological Opinion (1,900,000 AF)	Same	Same
Minimum flow below Keswick Dam	Flows for SWRCB WR 90-5 and USFWS discretionary use of CVPIA 3406(b)(2)	Same	Same
Feather River			
Minimum flow below Thermalito Diversion Dam	1983 DWR–CDFG Agreement (600 cfs)	Same	Same
Minimum flow below Thermalito Afterbay outlet	1983 DWR–CDFG Agreement (750-1,700 cfs)	Same	Same
Yuba River			
Minimum flow below Daguerre Point Dam	Interim D-1644 Operations[q]	Same	Same
American River			
Minimum flow below Nimbus Dam	SWRCB D-893[r] (see accompanying Operations Criteria), and USFWS discretionary use of CVPIA 3406(b)(2)	Same	Same
Minimum Flow at H Street Bridge	SWRCB D-893	Same	Same
Lower Sacramento River			
Minimum flow near Rio Vista	SWRCB D-1641	Same	Same

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
Mokelumne River			
Minimum flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs)	Same	Same
Minimum flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs)	Same	Same
Stanislaus River			
Minimum flow below Goodwin Dam	1987 Reclamation–CDFG agreement, and USFWS discretionary use of CVPIA 3406(b)(2)	Same	Same
Minimum dissolved oxygen	SWRCB D-1422	Same	Same
Merced River			
Minimum flow below Crocker-Huffman Diversion Dam	Davis-Grunsky (180-220 cfs, Nov-Mar), Cowell Agreement, and FERC 2179 (25-100 cfs)	Same	Same
Tuolumne River			
Minimum flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94,000–301,000 AF/year)	Same	Same
San Joaquin River			
San Joaquin River below Friant Dam/Mendota Pool	None	None	None
Maximum salinity near Vernalis	SWRCB D-1641	Same	Same
Minimum flow near Vernalis	SWRCB D-1641, and VAMP per SJRA	Same[s]	Same[s]

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
Sacramento River–San Joaquin River Delta			
Delta Outflow Index (Flow and Salinity)	SWRCB D-1641	Same	Same
Delta Cross Channel gate operation	SWRCB D-1641	Same	Same
Delta exports	SWRCB D-1641, USFWS discretionary use of CVPIA 3406(b)(2)	Same	Same
OPERATIONS CRITERIA: RIVER-SPECIFIC			
Upper Sacramento River			
Flow objective for navigation (Wilkins Slough)	3,500–5,000 cfs based on CVP water supply condition	Same	Same
American River			
Folsom Dam flood control	Variable 400/670 flood control diagram (without outlet modifications)	Same	Same
Flow below Nimbus Dam	Discretionary operations criteria corresponding to SWRCB D-893 required minimum flow	Same	Same
Sacramento Area Water Forum Mitigation Water	None	Up to 47,000 AF in dry years	Same
Feather River			
Flow at Mouth of Feather River (above Verona)	Maintain CDFG/DWR flow target of 2,800 cfs for Apr-Sep dependent on Oroville inflow and FRSA allocation	Same	Same
Stanislaus River			
Flow below Goodwin Dam	1997 New Melones IOP	Same	Same
San Joaquin River			
Salinity at Vernalis	D-1641	San Joaquin River Salinity Management Plan[t]	Same
OPERATIONS CRITERIA: SYSTEMWIDE			
CVP water allocation			

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
CVP Settlement and Exchange	100% (75% in Shasta critical years)	Same	Same
CVP refuges	100% (75% in Shasta critical years)	Same	Same
CVP agriculture	100%-0% based on supply (South-of-Delta allocations are reduced due to D-1641 and 3406(b)(2) allocation-related export restrictions)	Same	Same
CVP municipal & industrial	100%-50% based on supply (South-of-Delta allocations are reduced due to D-1641 and 3406(b)(2) allocation-related export restrictions)	Same	Same
SWP water allocation			
North of Delta (FRSA)	Contract-specific	Same	Same
South of Delta (including North Bay Aqueduct)	Based on supply; equal prioritization between agriculture and municipal and industrial based on Monterey Agreement	Same	Same
CVP-SWP coordinated operations			
Sharing of responsibility for in-basin use	1986 Coordinated Operations Agreement (2/3 of the North Bay Aqueduct diversions are considered as Delta Export, 1/3 of the North Bay Aqueduct diversion is considered as in-basin use)	1986 Coordinated Operations Agreement (FRWP EBMUD and 2/3 of the North Bay Aqueduct diversions are considered as Delta Export, 1/3 of the North Bay Aqueduct diversion is considered as in-basin use)	Same
Sharing of surplus flows	1986 Coordinated Operations Agreement	Same	Same
Sharing of restricted export capacity for project-specific priority pumping	Equal sharing of export capacity under SWRCB D-1641; use of CVPIA 3406(b)(2) restricts only CVP exports	Same	Same
Dedicated CVP conveyance at BPP	None	SWP to convey 50,000 AF/year of Level 2 refuge water supplies at BPP (July and August)	SWP to convey 100,000 AF/year of Level 2 refuge water supplies at BPP (July and August)
North-of-Delta accounting adjustments	None	CVP to provide the SWP a maximum of 375,000 AF/year of water to meet in-basin requirements through adjustments in 1986 Coordinated Operations Agreement	CVP to provide the SWP a maximum of 75,000 AF/year of water to meet in-basin requirements through adjustments in 1986 Coordinated Operations Agreement

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption
		accounting (released from Shasta)	accounting (released from Shasta)
Sharing of export capacity for lesser priority and wheeling-related pumping	Cross Valley Canal wheeling (maximum of 128,000 AF/year), CALFED ROD defined Joint Point of Diversion	Same	Same
San Luis Low Point	San Luis Reservoir is allowed to operate to a minimum storage of 100,000 AF.	Same	Same
CVPIA 3406(b)(2)			
Policy Decision	Per May 2003 Dept. of Interior Decision:	Same	Same
Allocation	800,000 AF, 700,000 AF in 40-30-30 dry years, and 600,000 AF in 40-30-30 critical years	Same	Same
CVPIA 3406(b)(2) (continued)			
Actions	1995 WQCP, Upstream fish flow objectives (Oct-Jan), VAMP (Apr 15-May 15) CVP export restriction, 3,000 cfs CVP export limit in May and June (D-1485 striped bass cont.), Post-VAMP (May 16-31) CVP export restriction, Ramping of CVP export (June), Upstream Releases (Feb-Sep)	Same	Same
Accounting adjustments	Per May 2003 Interior Decision, no limit on responsibility for nondiscretionary D-1641 requirements with 500,000 AF target, no reset with the storage metric and no offset with the release and export metrics, 200,000 AF target on costs from Oct-Jan	Same	Same

Notes:

[a] A detailed description of the assumptions selection criteria and policy basis used is included in the Policy section of this CACMP report.

[b] The Sacramento Valley hydrology used in the Existing Conditions CalSim model reflects nominal 2005 land-use assumptions. The nominal 2005 land-use was determined by interpolation between the 1995 and projected 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects 2005 land-use assumptions developed by Reclamation to support Reclamation studies.

[c] The Sacramento Valley hydrology used in the Future No Action CalSim model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation to support Reclamation studies.

[d] CVP contract amounts have been reviewed and updated according to existing and amended contracts as appropriate. Assumptions regarding CVP agricultural and municipal and industrial service contracts and Settlement Contract amounts are documented in Table 4 (North of Delta) and 6 (South of Delta) of Appendix B: CACMP Delivery Specifications.

CalSim Inputs,
Common Assumptions: Common Model Package (Version 9)

	Existing Condition Assumption	Future No Action Condition Assumption	Supplemental Future Condition (#1) Assumption

[e] SWP contract amounts have been reviewed and updated as appropriate. Assumptions regarding SWP agricultural and municipal and industrial contract amounts are documented in Table 2 (North of Delta) and Table 3 (South of Delta) of Appendix B: CACMP Delivery Specifications.

[f] Water needs for federal refuges have been reviewed and updated as appropriate. Assumptions regarding firm Level 2 refuge water needs are documented in Table 4 (North of Delta) and 6 (South of Delta) of Appendix B: CACMP Delivery Specifications. As part of the Water Transfers technical memorandum (Appendix A: Characterization and Quantification), incremental Level 4 refuge water needs have been documented as part of the assumptions of future water transfers.

[g] Assumptions regarding American River water rights and CVP contracts are documented in Table 5 of Appendix B: CACMP Delivery Specifications.

[h] Sacramento Area Water Forum 2025 assumptions are defined in Sacramento Water Forum's EIR. PCWA CVP contract supply is modified to be diverted at the PCWA pump station. Assumptions regarding American River water rights and CVP contracts are documented in Table 4 of Appendix B: PFCMP Delivery Specifications.

[i] The new CalSim representation of the SJR has been included in this model package (CalSim San Joaquin River Model, [Reclamation 2005]). Updates to the SJR have been included since the preliminary model release in August 2005. In addition, a dynamic groundwater simulation is currently being developed for SJR valley, but is not yet implemented. Groundwater extraction/ recharge and stream-groundwater interaction are static assumptions and may not accurately reflect a response to simulated actions. These limitations should be considered in the analysis of results.

[j] The CACMP CalSim model representation for the Stanislaus River does not necessarily represent Reclamation's current or future operational policies.

[k] The Existing CVP contract is 140,000 AF. The actual amount diverted is reduced due to supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 100,000 AF. Associated water rights for Delta excess flows are included.

[l] Table A and Article 21 deliveries into the San Francisco Bay Area Region–South and South Coast Region in the CACMP are a result of interaction between CalSim and LCPSIM. More information regarding LCPSIM is included in the following subsection of this document and the CalSim-LCPSIM Integration technical memorandum (see Appendix C: Analytical Framework).

[m] PCWA American River pumping facility upstream of Folsom Lake is under construction. A Sacramento River diversion for PCWA is not included in the PFCMP. This assumption will be revisited as part of the development of the FSCMP.

[n] Mokelumne River flows reflect EBMUD supplies associated with the Freeport Regional Water Project.

[o] The Contra Costa Water District Alternate Intake Project is a new intake at Victoria Canal to operate as an alternate intake for Los Vaqueros Reservoir. This assumption is consistent with the future no-project condition defined by the Los Vaqueros Enlargement study team.

[p] This Phase 8 requirement is assumed to be met through Sacramento Valley Water Management Agreement Implementation.

[q] Interim D-1644 is assumed to be implemented

[r] Sacramento Area Water Forum Lower American River Flow Management Standard is not included in the CACMP. Reclamation has agreed in principle to the Flow Management Standard, but flow specifications are not yet available for modeling purposes.

[s] It is assumed that either VAMP, a functional equivalent, or D-1641 requirements would be in place in 2030.

[t] The CACMP CalSim model representation for the SJR does not explicitly implement the CALFED Salinity Management Plan.

CACMP = Common Assumptions Common Models Package
FC&WSD = Flood Control and Water Supply District
FRSA = Feather River Service Area
FRWP = Freeport Regional Water Authority
FSCMP = Feasibility Study Common Models Package
KCWA = Kern County Water Authority
LCPSIM = Least Cost Pricing Simulation Model
MWD = Metropolitan Water District of Southern California
OCAP = Operations Criteria and Plan
PCWA = Placer County Water Authority
PFCMP = Plan Formulation Report Common Models Package