Mendota Pool Bypass and Reach 2B Improvements Project

Final
Environmental Impact Statement/Report

SAN JOAQUIN RIVER
RESTORATION PROGRAM

State Clearinghouse No. 2009072044

Final
July 2016

The San Joaquin River Restoration Program is a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from Interim and Restoration flows.

Mission Statements

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The California State Lands Commission provides the people of California with effective stewardship of the lands, waterways, and resources entrusted to its care through preservation, restoration, enhancement, responsible economic development, and the promotion of public access.

Table of Contents

Part V – Appendices to the EIS/R

Tables

Figures

List of Abbreviations and Acronyms

°C	degree Centigrade
°F	degree Fahrenheit
µg/L	microgram per liter
µg/m^3	micrograms per cubic meter
µS/cm	microsiemens per centimeter
4,4'-DDD	dichlorodiphenyldichloroethane
4,4'-DDE	dichlorodiphenyldichloroethylene
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
Act	San Joaquin River Restoration Settlement Act
ADRP	Archaeological Data Recovery Program
ADT	average daily traffic
AIA	Air Impact Assessment
alpha-HCH	alpha-hexachlorocyclohexane
APE	Area of Potential Effect
ARB	California Air Resources Board
B.P.	Before Present
BACT	Best Available Control Technology
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
BMP	Best Management Practice
CAA	Federal Clean Air Act
CAAA	Federal Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational and Health Administration
CAL-IPC	California Invasive Plant Council
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCID	Central California Irrigation District
CDF	California Department of Finance
CDFA	California Department of Food and Agriculture
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act

CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	Carbon monoxide
CO2e	Carbon dioxide equivalent
Corps	U.S. Army Corps of Engineers
Court	U.S. Eastern District Court of California
CPT	cone penetrometer test
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CT	Census Tract
CTR	California Toxics Rule
CVFED	Central Valley Floodplain Evaluation and Delineation
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVHM	Central Valley Hydrologic Model
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DDT	dichlorodiphenyltrichloroethane
Delta	Sacramento-San Joaquin Delta
DFW	California Department of Fish and Wildlife
DHS	California Department of Health Services
DMC	Delta-Mendota Canal
DOC	California Department of Conservation
DOE	California Department of Water Resources, Division of Engineering
DOGGR	California Department of Conservation Division of Oil, Gas, and Geothermal Resources
DOT	U.S. Department of Transportation
DPR	California Department of Pesticide Regulation
DSOD	California Department of Water Resources, Division of Safety of Dams
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources

EA	Environmental Assessment
EC	electrical conductivity
EDD	California Employment Development Department
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EIS/R	Environmental Impact Statement/Environmental Impact Report
EMFAC	Emission Factors Modeling Software
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
ESU	Evolutionarily Significant Unit
Exchange Contractors	San Joaquin River Exchange Contractors
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
Flood Control Project	Lower San Joaquin River Flood Control Project
Flood Operation Manual	Flood Control Project's Operation and Maintenance Manual for Levee, Irrigation and Drainage Structures, Channels and Miscellaneous Facilities
FMMP	California Farmland Mapping and Monitoring Program
FONSI	Finding of No Significant Impact
fps	feet per second
FR	Federal Register
Fresno COG	Fresno County of Government
FTA	Federal Transit Administration
FWA	Friant Water Authority
FWCA	Fish and Wildlife Coordination Act
FY	Fiscal Year
g	acceleration due to Earth's gravity
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GCM	Global Climate Model
GHG	greenhouse gas
GIS	Geographic Information System
GPS	global positioning system
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HEC-RAS	Hydrologic Engineering Center River Analysis System
HSG	Hydrologic Soils Group
IMPLAN	Impact Analysis for Planning
I-O	input-output

IEPR	Integrated Energy Policy Report
in/year	inches per year
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
ISMP	Invasive Species Management Plan
ISR	Indirect Source Review
Ldn	Day-Night Noise Level
Leq	Equivalent Noise Level
LESA	Land Evaluation and Site Assessment
Levee District	Lower San Joaquin Levee District
LiDAR	Light Detection and Ranging
Lmax	Maximum Noise Level
LN	The sound level exceeded N percent of the time
LOS	Levels of Service
LSJLD	Lower San Joaquin Levee District
MBTA	Migratory Bird Treaty Act
mg/L	milligram per liter
mm/year	millimeters per year
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
N2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAL	Numeric Action Limit
NEPA	National Environmental Policy Act
NGO	Non-governmental organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	Nitric oxide
NO2	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOD	Notice of Determination
NOE	Notice of Exemption
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NRHP	National Register of Historic Places

NTU	nephelometric turbidity unit
NULE	Non-Urban Levee Evaluation
NWP	Nationwide Permit
OEHHA	California Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHV	off-highway vehicle
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PCB	polychlorinated biphenyl
PEIS/R	Program Environmental Impact Statement/ Environmental Impact Report
PG&E	Pacific Gas and Electric Company
PIT	passive integrated transponder
PM10	particulate matter with an aerodynamic resistance diameter of 10 micrometers or less
PM2.5	Fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less
Pool	Mendota Pool
ppb	parts per billion
ppm	parts per million
PRD	Permit Registration Documents
Project	Mendota Pool Bypass and Reach 2B Improvements Project
RA	Restoration Administrator
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Restoration Area	the San Joaquin River Restoration area from Friant Dam to the Merced River confluence
RHA	Rivers and Harbors Act
RHJV	Riparian Habitat Joint Venture
RM	river mile
RoadMod	Roadway Construction Emissions Model
ROD	Record of Decision
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
RWA	Recovered Water Account
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCADA	supervisory control and data acquisition
Secretary	Secretary of the U.S. Department of the Interior
Settlement	Stipulation of Settlement
SFEI	San Francisco Estuary Institute

SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJRRP	San Joaquin River Restoration Program
SJRRPGW	San Joaquin River Restoration Program Groundwater Model
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVDP	San Joaquin Valley Drainage Program
SMARA	California Surface Mining and Reclamation Act
SO2	Sulfur dioxide
SR	State Route
SRH-1DV	Sedimentation and River Hydraulics One Dimensional Vegetation Model
State	State of California
SVP	Society of Vertebrate Paleontology
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T-BACT	Best Available Control Technology for toxic air contaminants
TAC	Technical Advisory Committee
TAF	thousand acre-feet
TDS	Total Dissolved Solids
Tg	teragram
TM	Technical Memorandum
TMDL	Total Maximum Daily Load
UCMP	University of California Museum of Paleontology
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VERA	Voluntary Emission Reduction Agreement
VMC	Visual Modification Class
VP	Viewing Position
WHR	California Wildlife Habitat Relationship System
WNV	West Nile Virus

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Executive Summary

Introduction and Background

Mendota Pool

The Mendota Pool Bypass and Reach 2B Improvements Project (Project) includes the construction, operation, and maintenance of the Mendota Pool Bypass and improvements in the San Joaquin River channel in Reach 2B (Figure S-1). The Project consists of a floodplain width that conveys at least 4,500 cubic feet per second (cfs), a method to bypass Restoration Flows around Mendota Pool, and a method to deliver water to Mendota Pool. The Project footprint and vicinity (Figure S-2) extend from approximately 0.3 mile above the Chowchilla Bifurcation Structure to approximately 1.0 mile below the Mendota Dam. The Project footprint comprises the area that could be directly affected by the Project. The Project study area or "Project area" includes areas directly and indirectly affected by the Project. The Project area is in Fresno and Madera counties, near the town of Mendota, California.

The Mendota Pool Bypass and Reach 2B improvements, defined in the Stipulation of Settlement in *Natural Resources Defense Council, et al., v. Kirk Rodgers, et al.* (Settlement), are (Settlement Paragraph 11[a]):

> *(1) Creation of a bypass channel around Mendota Pool to ensure conveyance of at least 4,500 cfs from Reach 2B downstream to Reach 3. This improvement requires construction of a structure capable of directing flow down the bypass and allowing the Secretary [of the Interior] to make deliveries of San Joaquin River water into Mendota Pool when necessary;*
>
> *(2) Modifications in channel capacity (incorporating new floodplain and related riparian habitat) to ensure conveyance of at least 4,500 cfs in Reach 2B between the Chowchilla Bifurcation Structure and the new Mendota Pool bypass channel.*

Because the functions of these channels may be inter-related, the design, environmental compliance, and construction of the two are being addressed as one project. The Project would be implemented consistent with the Settlement and the San Joaquin River Restoration Settlement Act (Act), with implementation dates clarified by the Draft Framework for Implementation (San Joaquin River Restoration Program [SJRRP] 2015).

Mendota Dam

Figure S-1. Overview of the SJRRP Restoration Area and the Project Vicinity

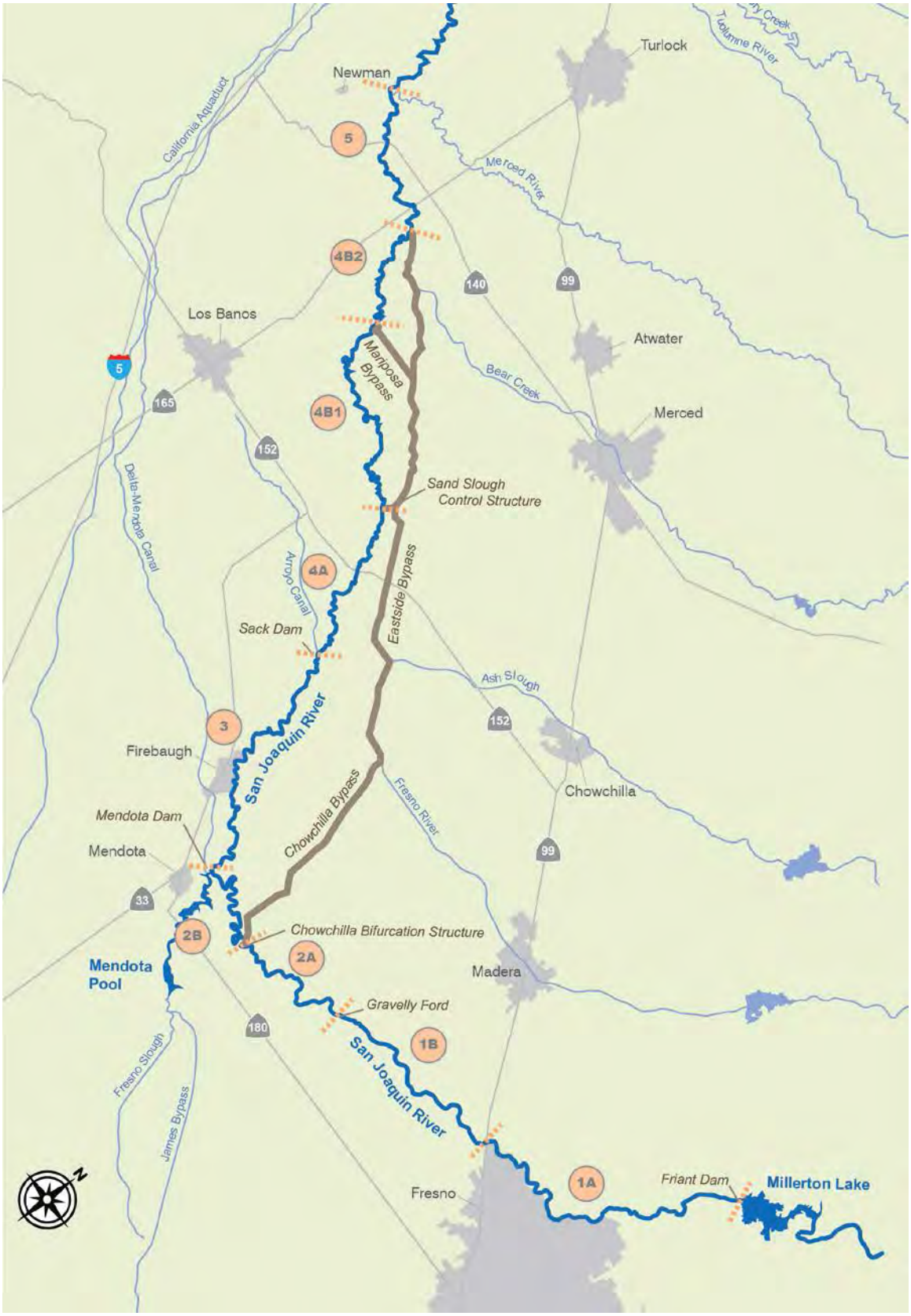
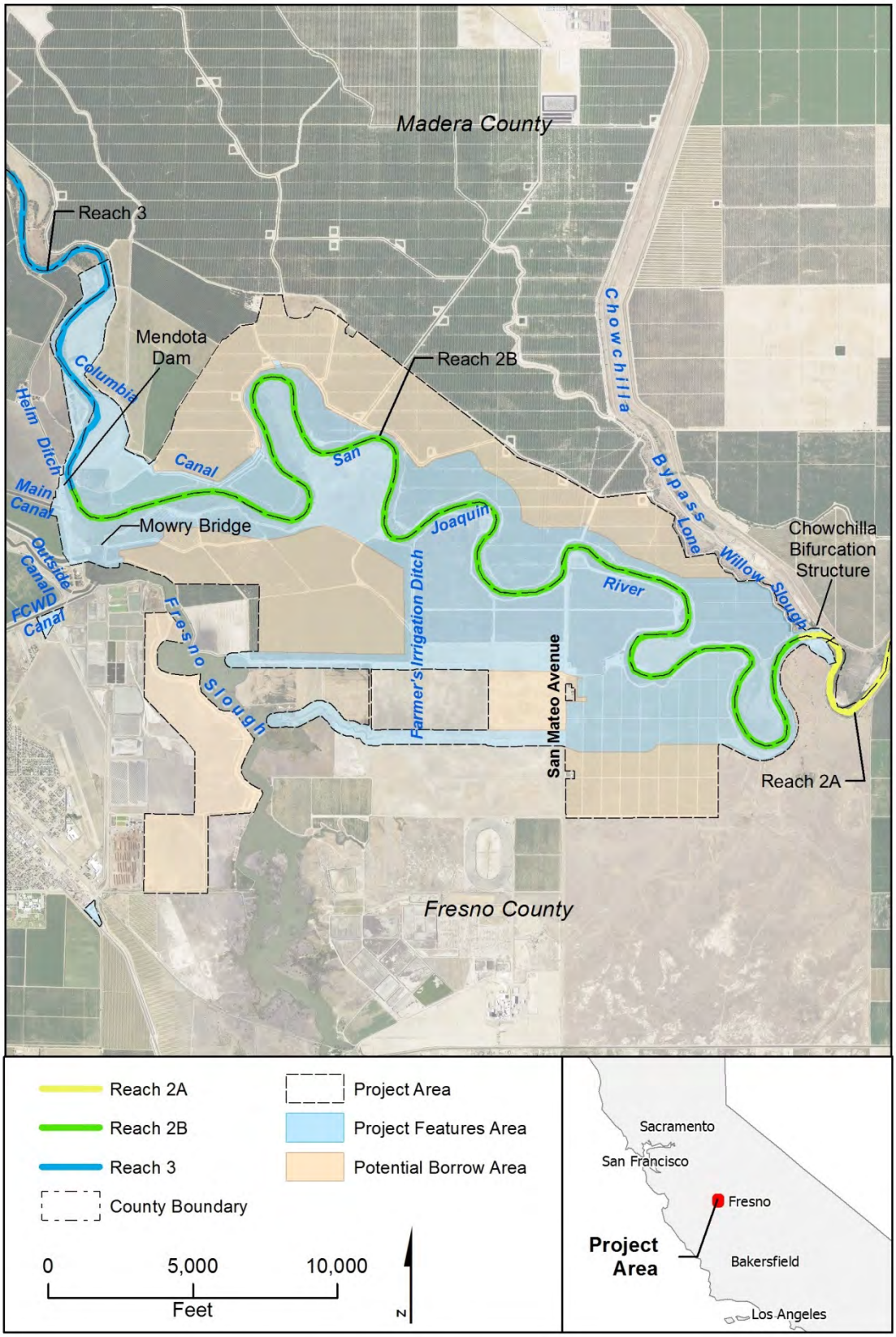


Figure S-2. Project Footprint and Vicinity



The Mendota Pool Bypass would include conveyance of at least 4,500 cfs around Mendota Pool (or the Pool) from Reach 2B to Reach 3 and a fish barrier, if appropriate, to direct upmigrating adult salmon into the bypass. The bypass could be accomplished by constructing a new channel around Mendota Pool or by limiting Mendota Pool to areas outside of the San Joaquin River. This action would include the ability to divert 2,500 cfs to the Pool if water deliveries are required for the San Joaquin River Exchange Contractors (Exchange Contractors) and may consist of a bifurcation structure in Reach 2B. The bifurcation structure would include a fish passage facility to enable up-migrating salmon to pass the structure and a fish screen, if appropriate, to direct out-migrating fish into the bypass channel and minimize or avoid fish entrainment to the Pool.

Headworks of the Main Canal

Improvements to Reach 2B would include modifications to the San Joaquin River channel from the Chowchilla Bifurcation Structure to the new Mendota Pool Bypass to provide a capacity of at least 4,500 cfs with integrated floodplain habitat. The options under consideration include potential levee setbacks along Reach 2B to increase the channel and floodplain capacity and provide for floodplain habitat. Floodplain habitat is included along the Reach 2B portion of the Project as required by the Settlement; floodplain habitat is being considered along the Mendota Pool Bypass channel because Central Valley floodplains have been shown to be of value to rearing juvenile salmon as they migrate downstream. In addition, the SJRRP Fisheries Management Plan (SJRRP 2010a) and Minimum Floodplain Habitat Area for Spring and Fall-Run Chinook Salmon report (SJRRP 2012) describe that sufficient floodplain habitat is an important feature for meeting salmon population targets.

This Executive Summary provides an overview of the Environmental Impact Statement/Environmental Impact Report (EIS/R) prepared pursuant to the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). This EIS/R evaluates alternative ways to implement Paragraphs 11(a)(1) and 11(a)(2) of the Settlement, consistent with the Act in Public Law 111-11. U.S. Department of the Interior, Bureau of Reclamation (Reclamation) is the lead NEPA agency and California State Lands Commission (CSLC) is the lead CEQA agency in preparing this EIS/R.

Chowchilla Bifurcation Structure

Stipulation of Settlement

In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit, known as *NRDC, et al., v. Kirk Rodgers, et al.*, challenging the renewal of long-term water service contracts between the United States and Central Valley Project (CVP) Friant Division contractors. On September 13, 2006, after more than 18 years of litigation, the Settling Parties, including NRDC, Friant Water Authority (FWA), and the U.S. Departments of the Interior and Commerce, agreed on the terms and conditions of a Settlement subsequently approved by the U.S. Eastern District Court of California on October 23, 2006. The Act, included in Public Law 111-11 and signed into law on March 30, 2009, authorizes and directs the Secretary of the Interior (Secretary) to implement the Settlement. The Settlement establishes two primary goals:

- **Restoration Goal** – To restore and maintain fish populations in "good condition" in the main stem San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- **Water Management Goal** – To reduce or avoid adverse water supply impacts on all of the Friant Division long-term contractors that may result from the Interim and Restoration flows provided for in the Settlement.

Chinook salmon

To achieve the Restoration Goal, the Settlement calls for releases of water from Friant Dam to the confluence of the Merced River (referred to as Interim and Restoration flows), a combination of channel and structural modifications along the San Joaquin River below Friant Dam, and reintroduction of Chinook salmon. Restoration Flows are specific volumes of water to be released from Friant Dam during different water year types, according to Exhibit B of the Settlement. Interim Flows are experimental flows that began in 2009 and ended December 2013 with the purpose of collecting relevant data concerning flows, temperatures, fish needs, seepage losses, recirculation, recapture, and reuse. Restoration Flows began January 1, 2014.

Orange groves within the Friant Division of the Central Valley Project

San Joaquin River Restoration Program

The SJRRP comprises several Federal and State of California (State) agencies responsible for implementing the Settlement. Implementing Agencies include Reclamation, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California Department of Water Resources (DWR), and California Department of Fish and Wildlife (DFW). In addition, the Settlement stipulates that a Technical Advisory Committee be established, comprising six members appointed by NRDC and FWA. The Settlement also calls for a Restoration Administrator (RA) to provide specific recommendations to the Secretary in coordination with the Technical Advisory Committee. The RA is responsible for consulting with the Secretary on implementing actions under Paragraph 11 of the Settlement, and for identifying and recommending additional actions under Paragraph 12 of the Settlement. In addition, the RA is responsible for consulting with the Secretary on the reintroduction of Chinook salmon under Paragraph 14 of the Settlement and flow releases under Paragraphs 13 and 15.

Releases from Friant Dam

Purpose and Uses of this Project EIS/R

The purpose of this EIS/R is to analyze the project-specific direct, indirect, and short term/long term impacts of implementing the Project as directed by the Act, consistent with NEPA/CEQA requirements. This EIS/R serves as an informational document for decision makers, public agencies, non-government organizations, and the general public regarding the potential direct and indirect environmental consequences of implementing any of the alternatives. This EIS/R supports the needed permits, petitions, and similar compliance, coordination, and consultation efforts for the Project actions.

As previously described, Reclamation is the lead NEPA agency and CSLC is the lead CEQA agency in preparing this EIS/R. The actions identified in this EIS/R include actions to be undertaken by Reclamation, as approved by CSLC. No sooner than 30 days after the final EIS/R is published, Reclamation will prepare a Record of Decision. Similarly, CSLC will take actions on whether to certify the EIR, approve the Project, and file a Notice of Determination.

The Settlement identifies the Secretary as the lead Federal entity responsible for implementation of the terms and conditions of the Settlement and USFWS as the lead Federal agency responsible for reintroduction of spring-run and fall-run Chinook salmon. The Secretary has designated Reclamation to act as the lead Federal entity responsible for implementation of the Settlement. The Settlement also identifies the Secretary of the U.S. Department of Commerce, through NMFS, as a necessary participant to allow for permitting the reintroduction of spring-run Chinook salmon. The Settlement also anticipated involvement of the California Natural Resources Agency through DWR and DFW. Therefore, the Settlement Implementing Agencies are Reclamation, USFWS, NMFS, DWR, and DFW.

San Joaquin River and Chowchilla Bypass

Reclamation and CSLC have coordinated with the Settling Parties and Implementing Agencies in preparation of this EIS/R. In addition, several agencies accepted the invitation to participate as cooperating agencies under NEPA, including U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (Corps), NMFS, and Central California Irrigation District. The cooperating agencies have provided input that has been considered in preparation of this EIS/R.

Scoping and Public Involvement Process

The lead agencies conducted public and stakeholder outreach activities to engage and inform all interested parties of Project activities. Engaging those interested parties helped to inform the process for scoping the Project alternatives and development of this EIS/R. Reclamation initiated the NEPA process by issuing a Notice of Intent on July 13, 2009, and DWR initiated the CEQA process by issuing a Notice of Preparation on the same day, to prepare an EIS/R and hold public scoping meetings. (Although initial CEQA actions were conducted by DWR, subsequent actions during the EIS/R process have been conducted by the CSLC as the State lead agency.)

The EIS/R scoping comment period began the date the Notice of Intent was issued and ended on August 14, 2009. The comments received were summarized in a Public Scoping Report released February 2010 (SJRRP 2010b). The NEPA scoping process also serves as the scoping process for compliance with other Federal laws such as the National Historic Preservation Act, Section 106.

Public involvement and outreach activities have enabled the Implementing Agencies to involve stakeholders and incorporate public and stakeholder input into the development of major Project documents, including this EIS/R. These activities seek to create an open and transparent process through which the general public, stakeholders, affected Third Parties, and other interested parties can track and participate in SJRRP activities, including the formulation of alternatives for this EIS/R. Ongoing public outreach activities conducted in support of the Project include the following:

- Hosting Project-specific landowner meetings as well as participating in SJRRP Technical Feedback Meetings with subject-matter experts, Settling Parties, affected stakeholders, and the general public to obtain information and viewpoints from individual attendees; provide updates on the status of Project work products; keep the Technical Feedback Group up-to-date with the current status of the Project; gather feedback on Project documents; and discuss potential opportunities and constraints that may arise.
- Making available technical memoranda and other milestone Project documents to the general public, stakeholders, affected Third Parties, and other interested parties on the SJRRP website.

Ornamental Palms in the Project Area

Purpose and Need for Action and Project Objectives

The purpose and objective of the Project are to implement portions of the Settlement consistent with the Act. The Act authorizes and directs the Secretary to implement the Settlement. Specifically, this Project is intended to implement Paragraphs 11(a)(1) and 11(a)(2) of the Settlement, which are authorized in Section 10004(a)(1) of the Act.

Paragraph 11(a)(1)

> *Creation of a bypass channel around Mendota Pool to ensure conveyance of at least 4,500 cfs from Reach 2B downstream to Reach 3. This improvement requires construction of a structure capable of directing flow down the bypass and allowing the Secretary to make deliveries of San Joaquin River water into Mendota Pool when necessary;*

Paragraph 11(a)(2)

> *Modifications in channel capacity (incorporating new floodplain and related riparian habitat) to ensure conveyance of at least 4,500 cfs in Reach 2B between the Chowchilla Bifurcation Structure and the new Mendota Pool bypass Channel;*

The Settlement specifies the need, which requires modifications to Reach 2B and construction of a bypass around Mendota Pool in support of achieving the Restoration Goal (Settlement Paragraph 2):

> *... a goal of this Settlement is to restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally-reproducing and self-sustaining populations of salmon and other fish (the "Restoration Goal").*

The purpose of providing increased channel capacity and floodplain and riparian habitat in Reach 2B responds to the need to restore and maintain fish populations in "good condition" by providing fish passage and rearing habitat which benefit salmon and other native fish. Without the Project in Reach 2B, restoration activities would be unlikely to achieve the Settlement goals.

Reach 2B Channel prior to Interim Flows

Project Study Area

The Project study area or "Project area" includes areas that may be affected directly or indirectly by the Project alternatives. The Project footprint (township 13S, range 15E), shown in Figure S-1, has two major components: Reach 2B and the Mendota Pool Bypass. Reach 2B generally includes the area from the San Joaquin River Control Structure near the Chowchilla Bypass downstream to Mendota Dam. Potential Project improvements in Reach 2B, which vary by alternative, extend from the Chowchilla Bifurcation Structure on the upstream end to the head of the potential Mendota Pool Bypass channel or to Mendota Dam on the downstream end. However, Reach 2B improvements may also include areas just upstream of the Chowchilla Bifurcation Structure and may continue downstream of the head of the Mendota Pool Bypass or Mendota Dam, including the Pool area, as necessary to meet Project goals and objectives. The lateral extent of potential Project Reach 2B improvements, which varies by alternative, includes lands to the north and south of the San Joaquin River in Reach 2B.

San Joaquin River near San Mateo Road

The Mendota Pool Bypass element of the Project alternatives generally includes the area from the downstream end of the Reach 2B improvements to a tie-in location in Reach 3. Improvements for the Mendota Pool Bypass, which vary by alternative, extend from the area south of Mowry Bridge over Fresno Slough to the area north of Mendota Dam where the bypass ties into Reach 3. The Mendota Pool Bypass element of the Project alternatives also includes areas adjacent to and on the west side of Mendota Pool and Fresno Slough and areas to the south of the potential Project Reach 2B improvements. Areas indirectly affected by this Project include portions of Reach 3 downstream and Reach 2A upstream that are outside the direct Project footprint.

The Project area reflects current estimates of areas that may be affected by the Project alternatives. In this EIS/R, the area where direct and indirect effects may occur differs according to resource area; therefore, the geographic range and environmental conditions described herein vary by resource.

Alternatives Evaluated in this EIS/R

This EIS/R presents a No-Action/No-Project Alternative (hereafter called the No-Action Alternative) and four Action Alternatives to implement the Project:

- No-Action Alternative
- Alternative A (Compact Bypass with Narrow Floodplain and South Canal)
- Alternative B (Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure), the Preferred Alternative
- Alternative C (Fresno Slough Dam with Narrow Floodplain and Short Canal)
- Alternative D (Fresno Slough Dam with Wide Floodplain and North Canal)

Each Action Alternative includes the actions called for in the Settlement for the Mendota Pool Bypass and Reach 2B. Action Alternatives would be designed to provide:

- Conveyance of at least 4,500 cfs in Reach 2B and around Mendota Pool
- Fish passage around Mendota Pool
- Diversion of up to 2,500 cfs from Reach 2B into Mendota Pool

Of the four Action Alternatives, there are two methods of bypassing Restoration Flows around Mendota Pool, two floodplain widths, and four ways to divert water into Mendota Pool (Table S-1).

Reach 2B during Interim Flows

Table S-1. Additional Activities Common or Related to Action Alternatives

ACTIVITY	ACTION ALTERNATIVE			
	A	B	C	D
Constructing a channel and structures capable of conveying up to 4,500 cfs of Restoration Flows around the Mendota Pool	♦	♦		
Constructing a dam capable of containing Mendota Pool within Fresno Slough so that 4,500 cfs of Restoration Flows can be conveyed around the Mendota Pool			♦	♦
Restoring floodplain habitat an average of approximately **3,000 feet wide** to provide benefit to salmonids and other native fishes	♦		♦	
Restoring floodplain habitat an average of approximately **4,200 feet wide** to provide benefit to salmonids and other native fishes		♦		♦
Constructing the South Canal and structures capable of conveying to 2,500 cfs from Reach 2B to Mendota Pool	♦			
Constructing the Bifurcation structure capable of conveying up to 2,500 cfs from Reach 2B to Mendota Pool		♦		
Constructing the Short Canal and structures capable of conveying to 2,500 cfs from Reach 2B to Mendota Pool			♦	
Constructing the North Canal and structures capable of conveying up to 2,500 cfs from Reach 2B to Mendota Pool				♦
Building levees capable of conveying flows up to 4,500 cfs with 3 feet of freeboard	♦	♦	♦	♦
Providing upstream and downstream fish passage for adult salmonids and other native fishes, and downstream fish passage for juvenile salmonids, between Reach 2A and Reach 3	♦	♦	♦	♦

Key:

Alternative A (Compact Bypass with Narrow Floodplain and South Canal)
Alternative B (Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure)
Alternative C (Fresno Slough Dam with Narrow Floodplain and Short Canal)
Alternative D (Fresno Slough Dam with Wide Floodplain and North Canal)
cfs = cubic feet per second

the existing Reach 2B capacity. It is assumed for the No-Action condition that agriculture would continue, and cropland would be the dominant cover type, consistent with the existing condition.

Alternative A

Alternative A (Compact Bypass with Narrow Floodplain and South Canal) would construct a channel between Reach 2B and Reach 3, the Compact Bypass channel, in order to bypass the Mendota Pool. Restoration Flows would enter Reach 2B, flow through the reach, then downstream to Reach 3 via the Compact Bypass channel. A canal to convey San Joaquin River water deliveries to Mendota Pool, the South Canal, would be built. The San Joaquin River control structure at the Chowchilla Bifurcation Structure would be removed, and a bifurcation structure would be built at the head of the South Canal to control flood diversions into the Chowchilla Bypass and water delivery diversions into Mendota Pool. Fish passage facilities and, if appropriate, a fish screen would be built at the South Canal bifurcation structure to provide passage around the structure and prevent fish being entrained in the diversion. A fish barrier would be built in Reach 3 to direct up-migrating fish into the Compact Bypass channel. A new crossing would be built at the San Mateo Avenue crossing. See Figure S-3 and Figure S-4 for a plan view of the alternative's features.

Leopard Frog in Reach 2B

Alternative B

Alternative B (Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure), the preferred alternative, would construct a channel between Reach 2B and Reach 3, the Compact Bypass channel, in order to bypass the Mendota Pool. Restoration Flows would enter Reach 2B at the Chowchilla Bifurcation Structure, flow through Reach 2B, then downstream to Reach 3 via the Compact Bypass channel. The existing Chowchilla Bifurcation Structure would continue to divert San Joaquin River flows into the Chowchilla Bypass during flood operations, and a fish passage facility and control structure modifications would be included at the San Joaquin River control structure at the Chowchilla Bifurcation Structure. A bifurcation structure would be built at the head of the Compact Bypass channel to control diversions into Mendota Pool. Fish passage facilities would be built at the Compact Bypass bifurcation structure to provide passage around the structure, and a fish screen would be built to prevent fish being entrained in the diversion to Mendota Pool. The existing San Mateo Avenue crossing would be removed. See Figure S-5 and Figure S-6 for a plan view of the alternative's features.

Alternative C

Alternative C (Fresno Slough Dam with Narrow Floodplain and Short Canal) would build a dam across Fresno Slough, the Fresno Slough Dam, to contain the Mendota Pool, and it would utilize the existing river channel in order to bypass the Mendota Pool. Restoration Flows would enter Reach 2B at the Chowchilla Bifurcation Structure, flow through Reach 2B, then downstream to Reach 3 over the sill at Mendota Dam. Mendota Pool would be contained south of the Fresno Slough Dam. The existing Chowchilla Bifurcation Structure would continue to divert San Joaquin River flows into the Chowchilla Bypass during flood operations, and a fish passage facility and control structure modifications would be included at the San Joaquin River control structure

at the Chowchilla Bifurcation Structure. A canal to convey San Joaquin River water deliveries to Mendota Pool, the Short Canal, would be built adjacent to the Fresno Slough Dam. The Mendota Dam along with a control structure built at the head of the Short Canal would be used to control diversions into Mendota Pool through the Short Canal. Fish passage facilities at Mendota Dam and, if appropriate, a fish screen on the Short Canal would be built to provide passage around Mendota Dam and prevent fish from being entrained in the diversion. A fish barrier would be built downstream of the Fresno Slough Dam to keep up-migrating fish in Reach 2B. A new crossing would be built at the San Mateo Avenue crossing. See Figure S-7 and Figure S-8 for a plan view of the alternative's features.

Alternative D

Alternative D (Fresno Slough Dam with Wide Floodplain and North Canal) would build a dam across Fresno Slough, the Fresno Slough Dam, to contain the Mendota Pool, and it would utilize the existing river channel in order to bypass the Mendota Pool. Restoration Flows would enter Reach 2B, flow through the reach, then downstream to Reach 3 over the sill at Mendota Dam. Mendota Pool would be contained south of the Fresno Slough Dam. A canal to convey San Joaquin River water deliveries to Mendota Pool, the North Canal, would be built. The San Joaquin River control structure at the Chowchilla Bifurcation Structure would be removed, and a bifurcation structure would be built at the head of the North Canal to control flood diversions into the Chowchilla Bypass and water delivery diversions into Mendota Pool. Fish passage facilities and, if appropriate, a fish screen would be built at the North Canal bifurcation structure to provide passage around the structure and prevent fish being entrained in the diversion. A fish barrier would be built downstream of the Fresno Slough Dam to keep up-migrating fish in Reach 2B. The existing San Mateo Avenue crossing would be removed. See Figure S-9 and Figure S-10 for a plan view of the alternative's features.

White-faced Ibis

Elements Common to All Action Alternatives

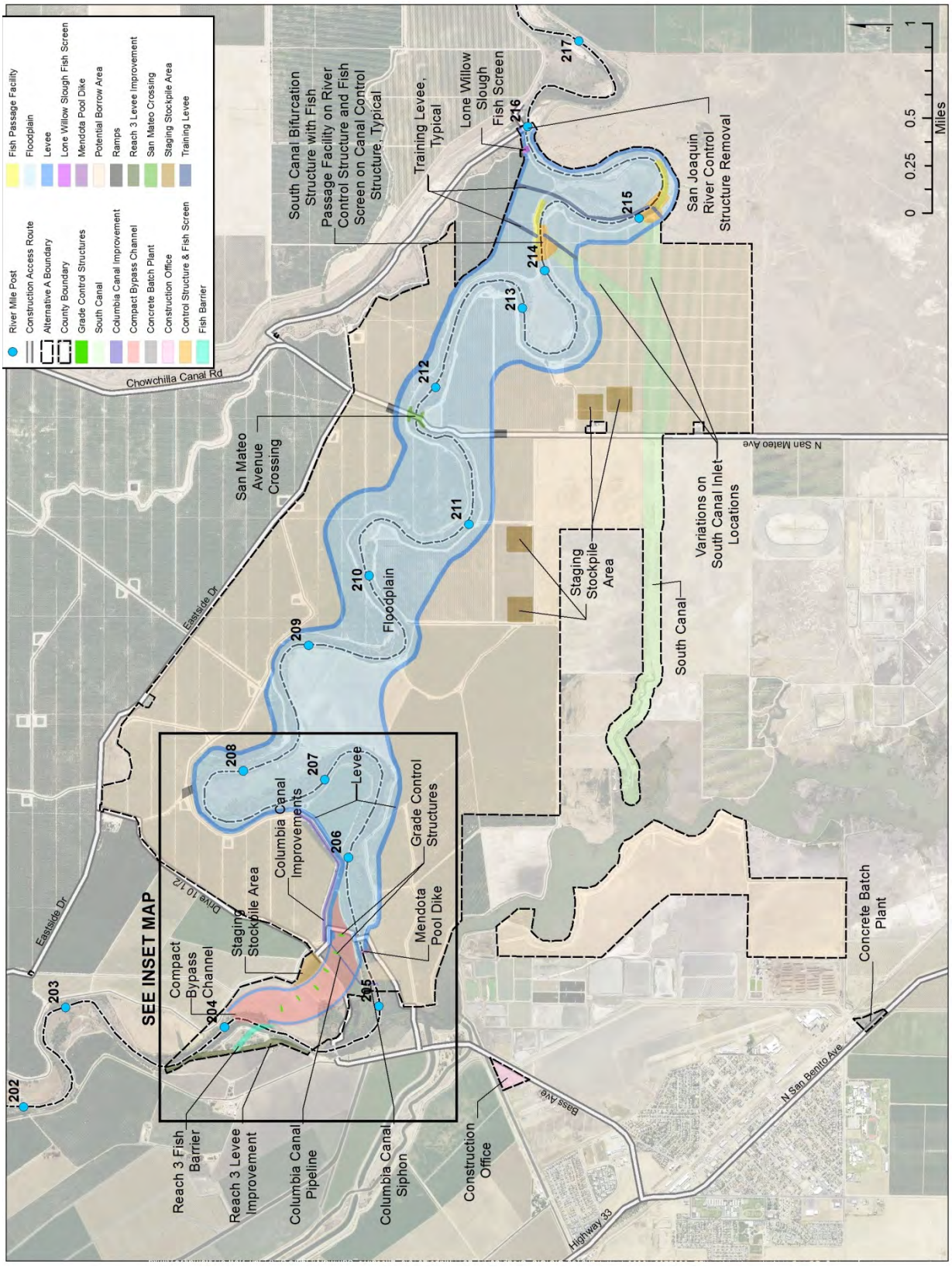
Some constructed elements are common to all Action Alternatives. Those elements are:

- Fish Passage Criteria– One of the primary focuses of the Project is to provide floodplain and riparian habitat to benefit migrating juvenile and adult salmonids and other native fishes. Floodplain and riparian habitats in the Action Alternatives would include a variety of native plant communities suited to the hydrology, soils, and climate of Reach 2B and the San Joaquin Valley. The Action Alternatives also include provision of fish passage at structures for salmonids and other native fish. These structures vary by alternative, but overall include fish screens, fish passage facilities, grade control structures, and bifurcation structures (under certain flows).
- Levees – Setback levees would be required along the Project area to contain Restoration Flows. While the height and footprint of the levees vary according to their locations along the channel and the ground elevation, the capacity, freeboard, and cross-section would be consistent. Localized backwater and redirection effects at Project structures would be considered during design of levee heights. Levees would be designed to maintain 3 feet of freeboard on the levees at 4,500 cfs. Levee alignments maintain a 300-foot buffer zone, where appropriate, between the levee and river channel to avoid impact to levees over time due to potential channel migration.

Chinook salmon

- Seepage Control Measures – Seepage of river water through or under levees is a concern for levee integrity and adjacent land uses. Through-seepage, water that seeps laterally through the levee section, would be addressed through proper levee design and construction (e.g., selection of low porosity materials and proper compaction). Under-seepage, water that seeps laterally by traveling under the levee section, is primarily controlled by the native soils beneath the levee, and seepage control measures would be included where native soils do not provide sufficient control.
- Borrow – Borrow material (suitable soils) would primarily be required for the construction of the levees, but it may also be used in the construction of other structures for foundation or backfill material. Levees may be constructed entirely of local borrow material, a mix of local and imported borrow material, or just imported borrow material.
- Levee and Structure Protection – Action Alternatives generally provide a minimum 300-foot buffer between the existing channel and the proposed levee, where appropriate and feasible. Locations that require erosion protection in the form of revetment include areas where the 300-foot buffer was not included due to the proximity of existing infrastructure, near the proposed structures, and along river bends less than 300 feet from the levee.

Figure S-3. Plan View of Alternative A
(Compact Bypass with Narrow Floodplain and South Canal)



ALTERNATIVES IN THIS EIS/R

Figure S-4. Inset Map of Alternative A
(Compact Bypass with Narrow Floodplain and South Canal)

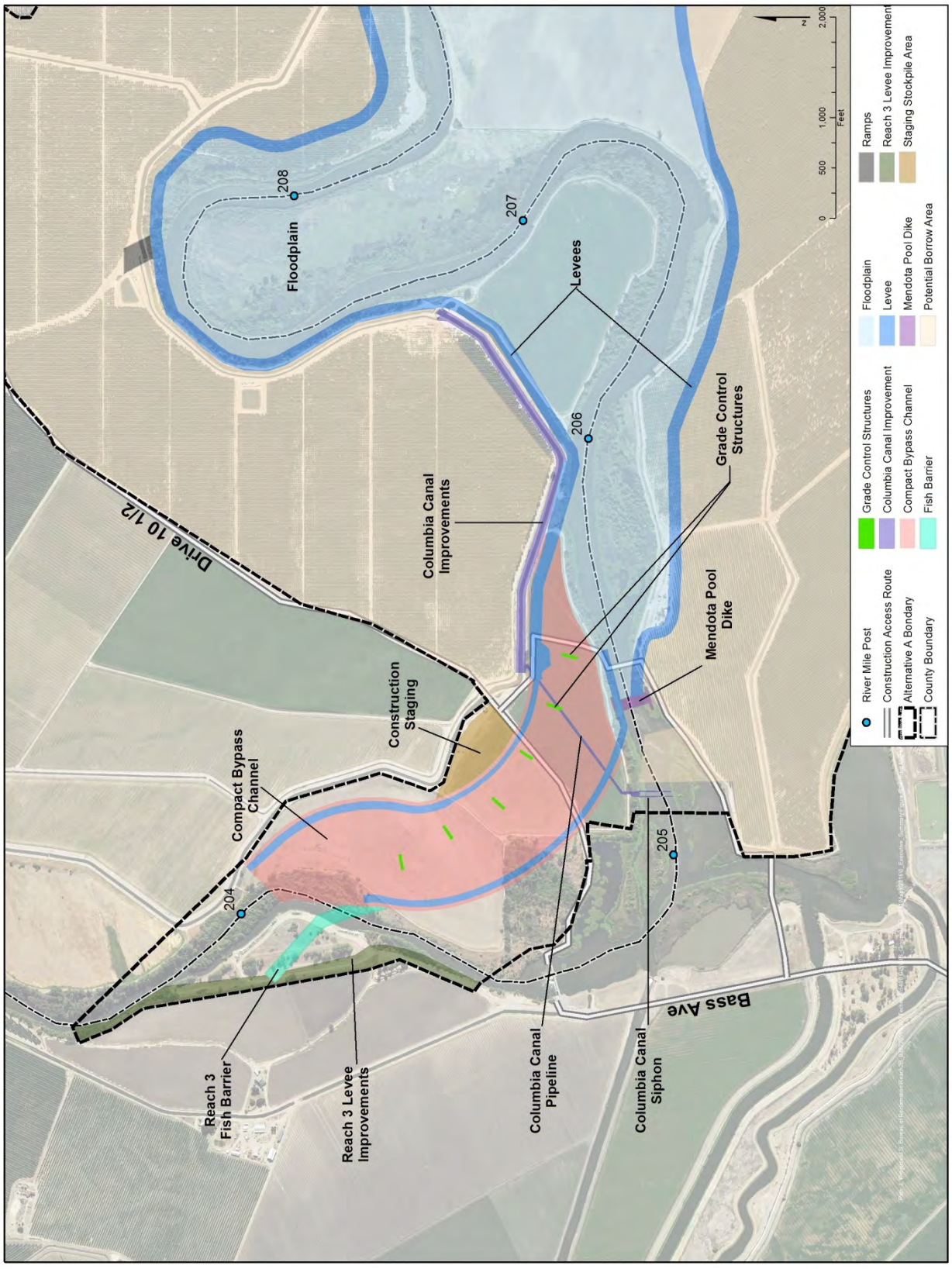
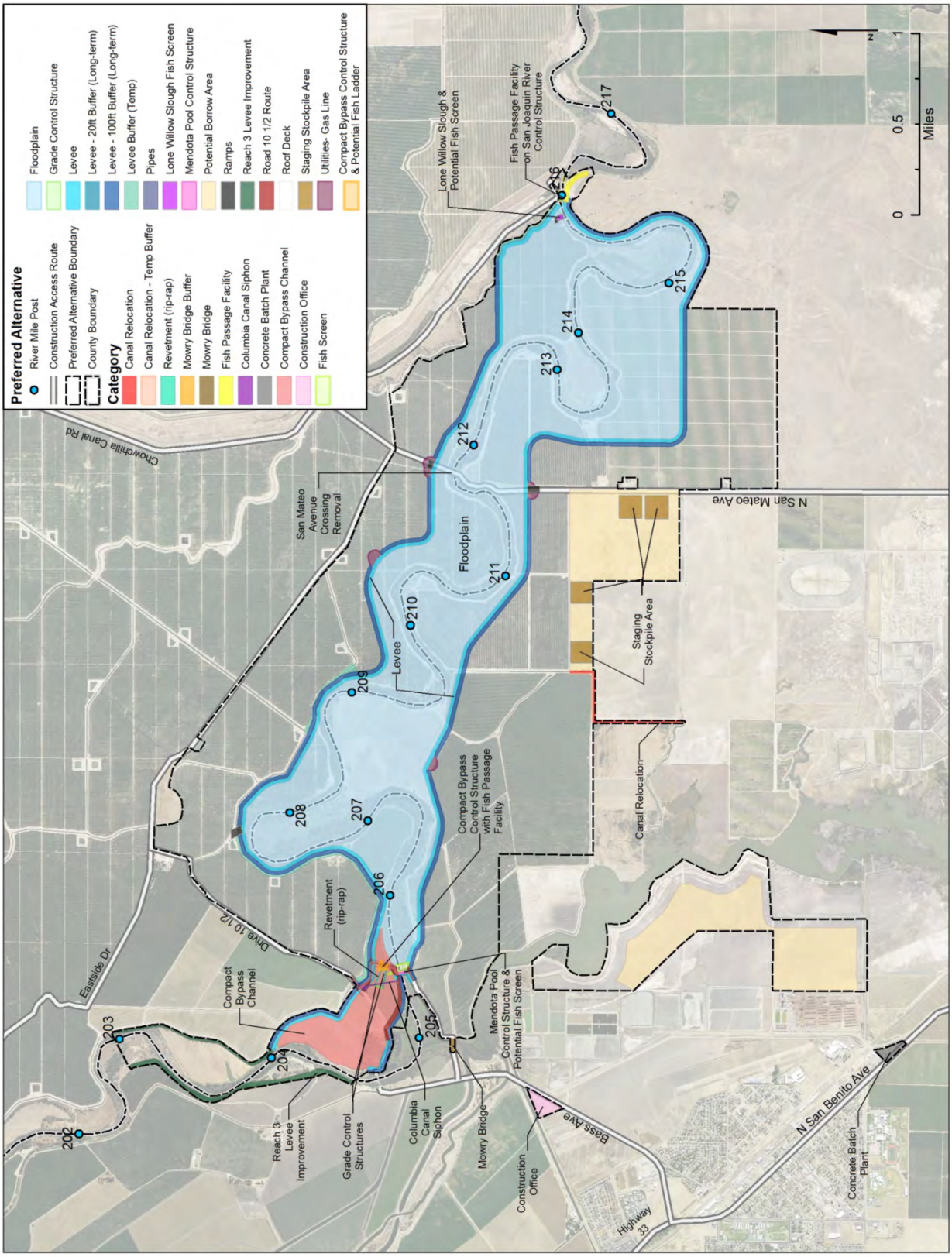


Figure S-5. Plan View of Alternative B
(Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure)



ALTERNATIVES IN THIS EIS/R

Figure S-6. Inset Map of Alternative B
(Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure)

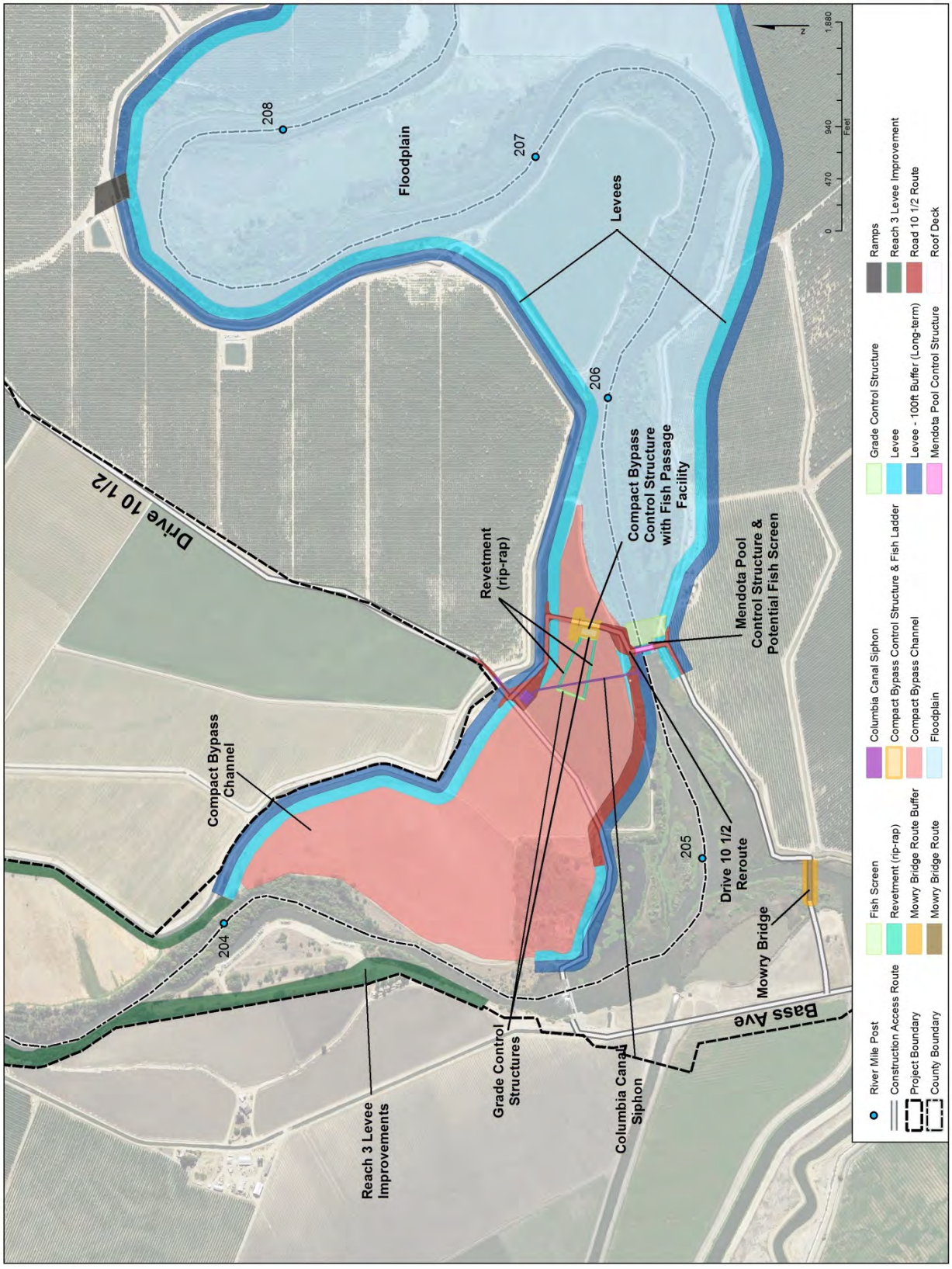


Figure S-7. Plan View of Alternative C
(Fresno Slough Dam with Narrow Floodplain and Short Canal)

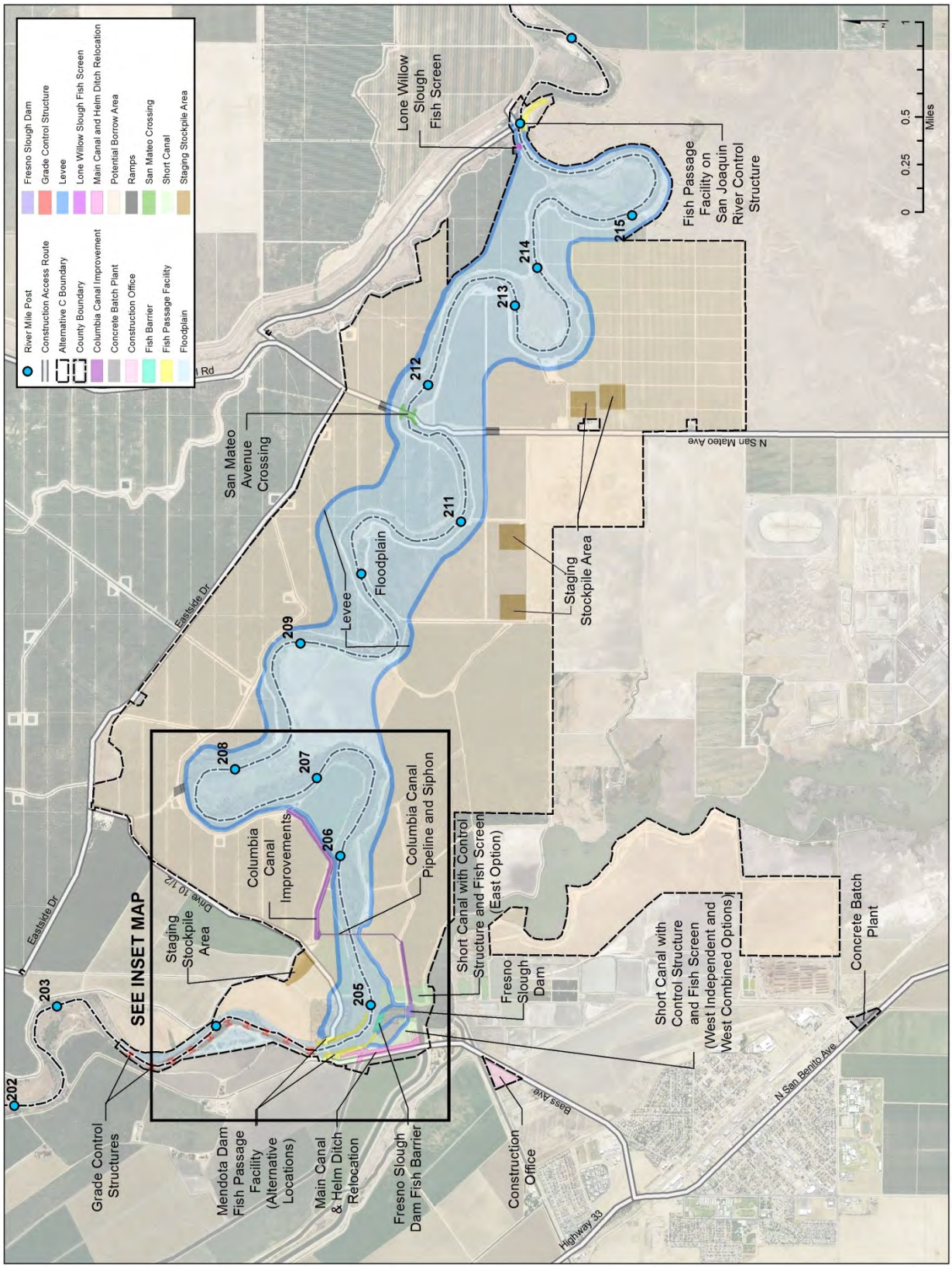


Figure S-8. Inset Map of Alternative C
(Fresno Slough Dam with Narrow Floodplain and Short Canal)

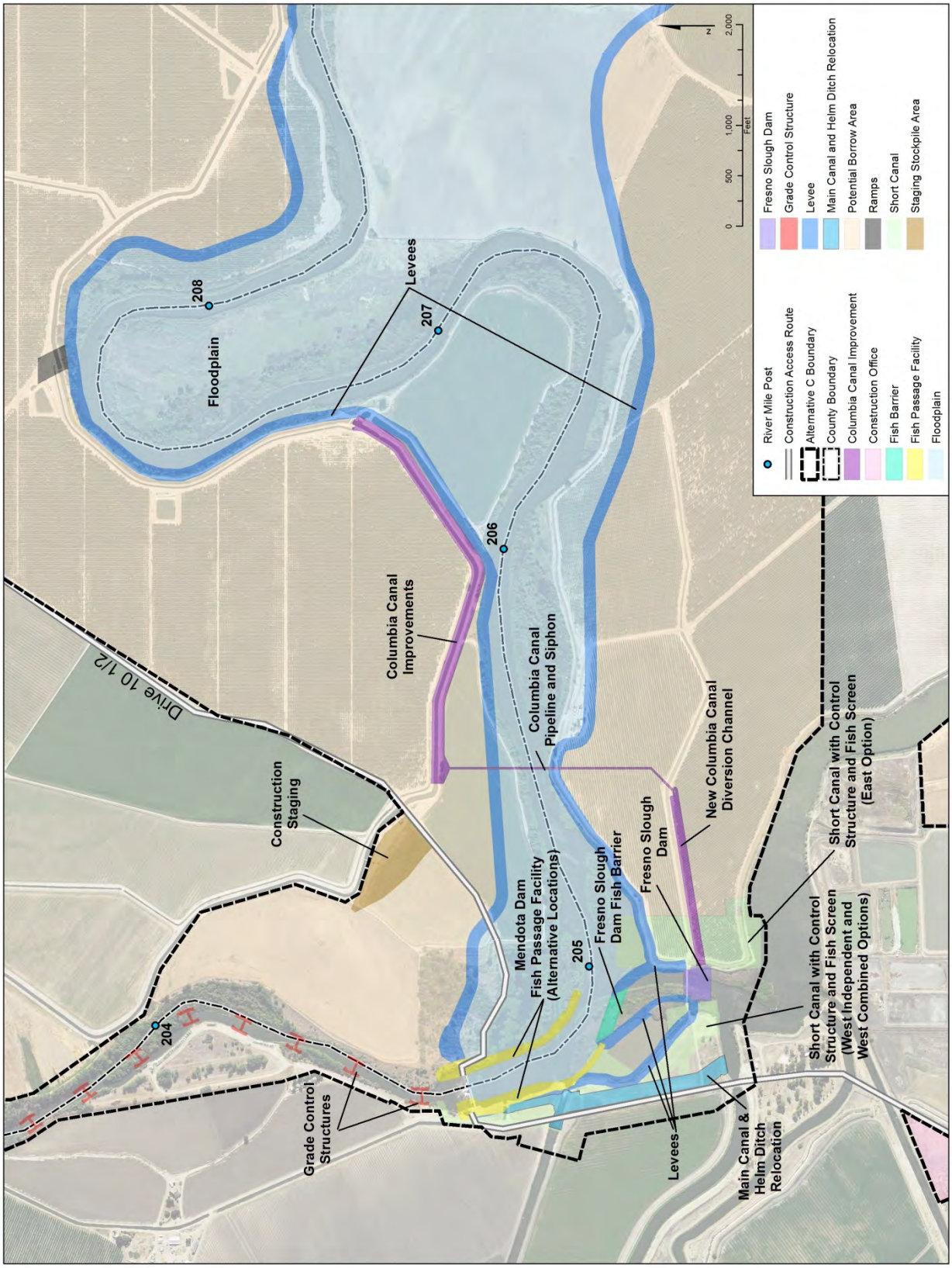


Figure S-9. Plan View of Alternative D
(Fresno Slough Dam with Wide Floodplain and North Canal)

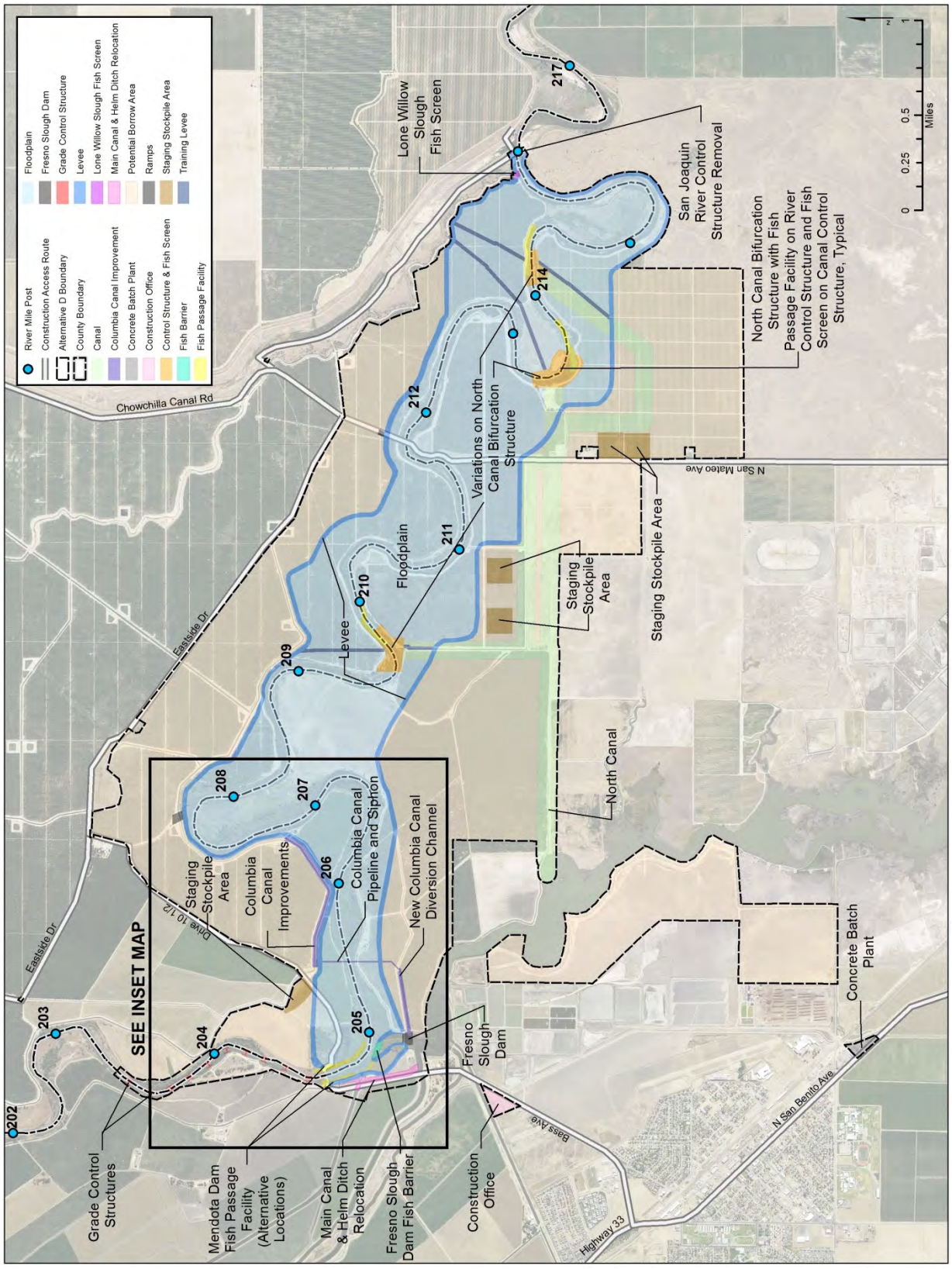
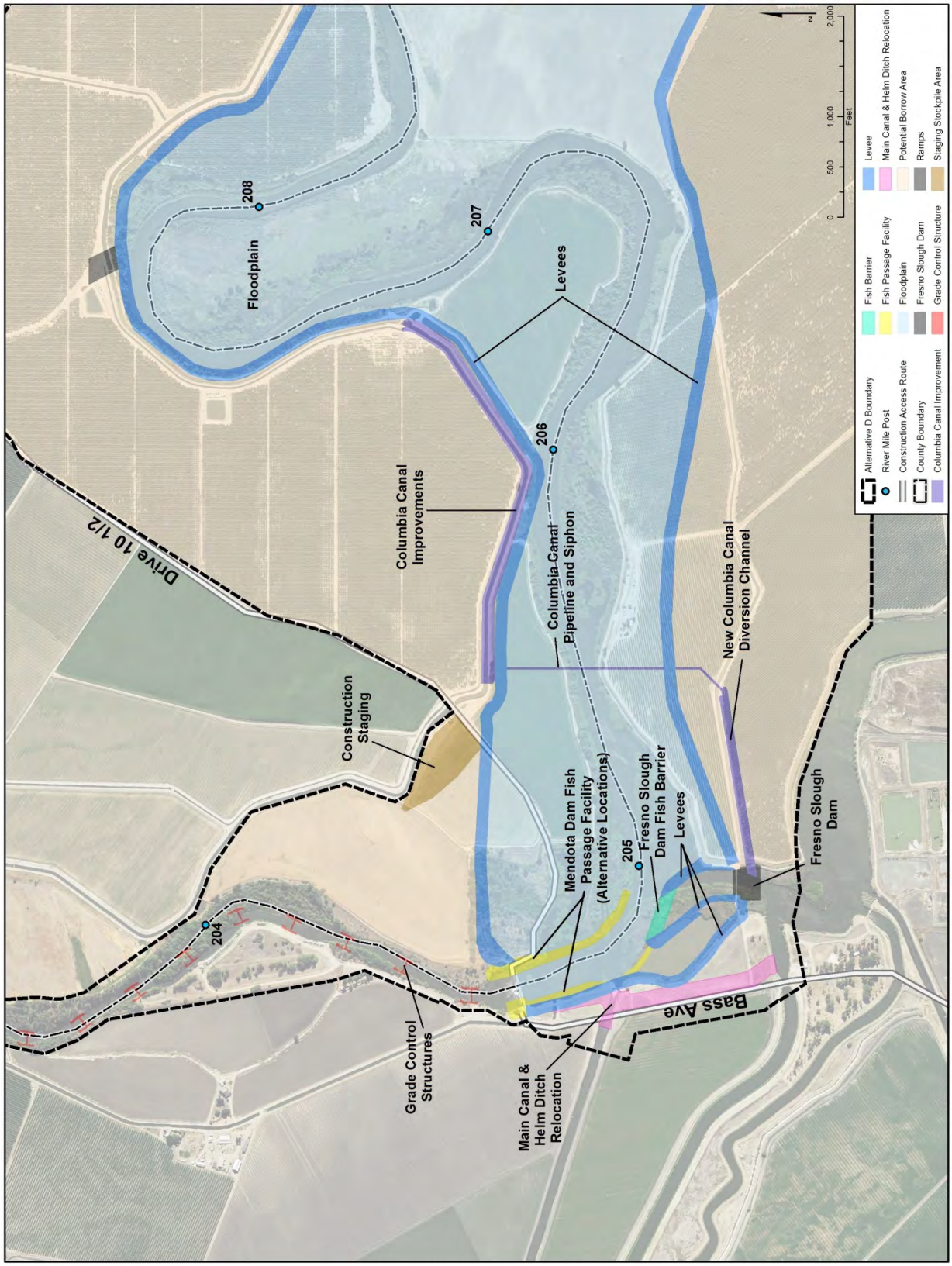


Figure S-10. Inset Map of Alternative D
(Fresno Slough Dam with Wide Floodplain and North Canal)



- Removal of Existing Levees – Removal of portions of the existing levees is included and designed to expand the inundation area of the floodplain out to the proposed levees and improve connectivity between the river channel and proposed floodplain. The locations of existing levee removal would be based upon the hydraulic performance of the channel and floodplain. In certain locations, however, highly desirable existing vegetation (native and sensitive vegetation communities that can serve as seed banks for future vegetation communities) can be found on the existing levees. Where hydraulic performance and connectivity of the floodplain would not be negatively affected, portions of the existing levees with highly desirable vegetation would remain in place.
- Floodplain Grading – Floodplain and channel grading can provide benefits to salmon and other native fish by allowing inundation to occur at lower flows, by distributing suitable rearing habitats further into the floodplain, by connecting rearing habitat to primary production areas (shallow water habitat), by providing escape routes during receding flows, and by confining flows to a deeper, narrower channel to limit temperature increases.
- Infrastructure for Fish Monitoring – The designs for control structures, fish passage facilities, and fish screens include security fences and gates, mounting hardware, and electrical supply in order to conduct fish monitoring activities. The fish monitoring activities themselves are not included in this Project, and will be addressed in subsequent environmental analysis, as appropriate.
- Existing Infrastructure Relocations or Floodproofing – Some existing infrastructure such as groundwater wells, pumps, electrical and gas distribution lines, water pipelines, and canals located in the Project area would require relocation or floodproofing to protect them from future Restoration Flows and increased floodplain area.
- Construction Access – Access for vehicles carrying materials, equipment, and personnel to and from the construction area would be provided via several existing roadways in the Project vicinity. Improvements may be required to upgrade roadways, pavements, and crossings for anticipated construction traffic and loads, provide adequate turning radii and site distances, and to control dust on non-paved roads.
- Revegetation of Temporary Disturbance Areas – Areas temporarily disturbed during construction would be restored to their previous contours, if feasible, and then seeded with a native vegetation seed mixture to prevent soil erosion. Some areas, such as borrow areas, may not be feasible to restore previous contours, but these areas would be smoothed and seeded.
- Land Acquisition – Additional lands would be acquired to accommodate the floodplain, levees, bypass channel, structures, and borrow. The amount of land acquisition varies with alternative.
- Phased Implementation – The Project would use a phased approach to implementation of the selected alternative. Phased implementation would involve building selected components of the Project in separate construction phases, allowing Project funding to be secured over time. This

Reach 2B Riparian Corridor

phasing refers only to the sequence in which the actual Project components would be constructed.

In addition to these elements, the following activities are also common to all Action Alternatives:

- Operations and Maintenance – The Project includes long-term operations and maintenance of the proposed facilities and features.
- Monitoring Activities – Monitoring activities in Reach 2B could include flow monitoring, groundwater level monitoring, aerial and topographic surveys, vegetation surveys, sediment mobilization and monitoring, and passage and screen effectiveness.

Field Surveys in Reach 2B

Vegetation Surveys in Reach 2B

Environmental Commitments

Conservation Strategy

As part of SJRRP implementation, a comprehensive strategy for the conservation of listed and sensitive species and habitats has been prepared, and will be implemented in coordination with USFWS, NMFS, DFW and other regulatory agencies, as appropriate. The goals of the strategy are as follows:

- Conserve riparian vegetation and waters of the United States, including wetlands
- Control and manage invasive species
- Conserve special-status species

The SJRRP's Conservation Strategy includes conservation measures for biological resources that may be affected by Project actions (listed in Table S-2). These measures are based on those presented in the PEIS/R (SJRRP 2011a, pages 2-55 to 2-79) and those detailed in Section 2.2.10 of this EIS/R.

Elderberry in Reach 2B

Table S-2. Conservation Measures for Biological Resources

IDENTIFIER	CONSERVATION MEASURE
VELB	**VALLEY ELDERBERRY LONGHORN BEETLE**
VELB-1	Avoid and minimize effects to species
BNLL	**BLUNT-NOSED LEOPARD LIZARD**
BNLL-1	Avoid and minimize effects to species
PLANTS	**OTHER SPECIAL-STATUS PLANTS**
PLANTS-1	Avoid and minimize effects to special-status plants
GGS	**GIANT GARTER SNAKE**
GGS-1	Avoid and minimize loss of habitat for giant garter snake
GGS-2	Compensate for temporary or permanent loss of habitat
WPT	**WESTERN POND TURTLE**
WPT-1	Avoid and minimize loss of individuals
SWH	**SWAINSON'S HAWK**
SWH-1	Avoid and minimize impacts to Swainson's Hawk
SWH-2	Compensate for loss of nest trees and foraging habitat
RAPTOR	**OTHER NESTING RAPTORS**
RAPTOR-1	Avoid and minimize loss of individual raptors
RAPTOR-2	Compensate for loss of nest trees
RNB	**RIPARIAN NESTING BIRDS: LEAST BELL'S VIREO**
RNB-1	Avoid and minimize effects to species
MBTA	**OTHER BIRDS PROTECTED BY THE MIGRATORY BIRD TREATY ACT**
MBTA-1	Avoid and minimize effects to species
TRI	**TRICOLORED BLACKBIRD**
TRI-1	Avoid Nesting Colonies
SWA	**CLIFF SWALLOWS**
SWA-1	Avoid Nesting Colonies
BRO	**BURROWING OWL**
BRO-1	Avoid loss of individuals
BRO-2	Minimize impacts to species
BAT	**SPECIAL-STATUS BATS**
BAT-1	Avoid and minimize loss of individuals
BAT-2	Compensate for loss of habitat
FKR	**FRESNO KANGAROO RAT**
FKR-1	Avoid and minimize effects to species
SJKF	**SAN JOAQUIN KIT FOX**
SJKF-1	Avoid and minimize effects to species
PL	**PACIFIC LAMPREY**
PL-1	Avoid and minimize effects to species
RHSNC	**RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES**
RHSNC-1	Avoid and minimize loss of riparian habitat and other sensitive natural communities
RHSNC-2	Compensate for loss of riparian habitat and other sensitive natural communities
WUS	**WATERS OF THE UNITED STATES/WATERS OF THE STATE**
WUS-1	Identify and quantify wetlands and other waters of the United States

Table S-2. Conservation Measures for Biological Resources

IDENTIFIER	CONSERVATION MEASURE
WUS-2	Obtain permits and compensate for any loss of wetlands and other waters of the United States/waters of the State
INV	**INVASIVE PLANTS**
INV-1	Implement the Invasive Vegetation Monitoring and Management Plan
CP	**CONSERVATION PLANS**
CP-1	Remain consistent with approved conservation plans
CP-2	Compensate effects consistent with approved conservation plans
CVS	**CENTRAL VALLEY STEELHEAD**
CVS-1	Avoid loss of habitat and risk of take of species
CVS-2	Minimize loss of habitat and risk of take of species
EFH	**ESSENTIAL FISH HABITAT (PACIFIC SALMONIDS AND STARRY FLOUNDER)**
EFH-1	Avoid loss of habitat and risk of take of species
EFH-2	Minimize loss of habitat and risk of take from implementation of construction activities

Ash-throated Flycatcher in Reach 2B

Minimize Flood Risk from Restoration Flows

The SJRRP's strategy for minimizing flood risk is to limit the maximum downstream extent and rate of Restoration flows for the given reach to then-existing channel capacities. This strategy is incorporated by reference from the PEIS/R (SJRRP 2011a, pages 2-22 through 2-28) and summarized in Section 2.2.10 of this EIS/R. These Program-wide commitments are documented in the PEIS/R Record of Decision (ROD), and no new Project-level actions to minimize flood risk from Restoration flows are being proposed.

Reach 2B during Interim Flows

Areas of Known Controversy and Issues to be Resolved

State CEQA Guidelines section 15123, subdivision (b), requires that an Executive Summary identify "areas of controversy known to the lead agency including issues raised by agencies and the public." The alternatives development process provided opportunities for early stakeholder involvement and input. Primary stakeholders include Federal, State, and local agencies, landowners, the Restoration Administrator and Technical Advisory Committee of the SJRRP, non-governmental organizations, and the public. Comments received during the scoping process include topics related to agriculture, air quality, canal distribution systems, economic development, flood control and levees, groundwater and wells, wells, Interim Flows, surface water, traffic, water quality, wetland and riparian environment, SJRRP actions, and the construction schedule. Areas of known controversy include the potential for groundwater seepage to occur in agricultural areas outside of the floodplain, the potential for future long-term recreational development of the Project area, and the need for a Mendota Pool Fish Screen and Reach 3 Fish Barrier. Groundwater seepage will be addressed during levee design and through the SJRRP's seepage management activities, which are being analyzed in separate environmental analysis, as appropriate (potential groundwater impacts of the Project are analyzed and disclosed in this EIS/R and mitigation measures are discussed as appropriate). Although recreational development is not within the scope of the Project, portage facilities around Project structures would include signage regarding safety and trespass issues. The Mendota Pool Fish Screen and Reach 3 Fish Barrier are analyzed in the Project alternatives; The Record of Decision for this Project will describe the project elements that Reclamation intends to implement as the selected alternative for the Project. There are no remaining issues to be resolved.

Red-tailed Hawk in Reach 2B

Consensus-Based Alternative

A meeting was held on January 29, 2013, to introduce the consensus-based alternative concept and approach to adjacent landowners, canal companies, irrigation districts, levee districts, cities, and the Settling Parties. The consensus-based alternative approach gave these entities the opportunity to provide input on the Project alternatives, and their input was considered during the identification of the preferred alternative. Following several meetings with the individuals and groups listed above, Reclamation and CSLC identified a preferred alternative, Alternative B, based on the input received on the Action Alternatives. The alternative selected for implementation will be articulated in the Record of Decision, which will be completed no less than 30 days following the release of the final EIS/R, and in the findings and other documents completed in accordance with CEQA.

Orchard in bloom in the San Joaquin Valley

Summary and Comparison of Impacts and Mitigation Measures

The impact conclusions and associated mitigation measures for the 21 resource topics evaluated in this EIS/R are summarized Tables S-3 and S-4. Impacts with the potential to result in a cumulatively considerable contribution to a significant cumulative impact are shown in Table S-5. Most action alternatives have the same impact level of significance before and after mitigation. For these impacts, Table S-3 below compares the No-Action alternative to the Action Alternatives together.

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
AIR QUALITY				
AQ-1: Create Excess Amounts of Construction Related Criteria Air Pollutants that Exceed SJVAPCD Thresholds of Significance or Cause or Contribute to Exceedances of the AAQS	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	AQ-1A: Reduce Criteria Exhaust Emissions from Construction Equipment AQ-1B: Reduce Criteria Exhaust Emissions from Material Hauling Vehicles AQ-1C: Offset Project Construction Emissions Through a SJVAPCD Voluntary Emission Reduction Agreement	LTS
AQ-2: Conflict with Applicable Plans or Policies Related to Air Quality	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	AQ-2: Reduce or Offset Project Emissions	LTS
AQ-3: Expose Sensitive Receptors to Substantial Air Pollutants Associated with Construction	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	AQ-3A: Reduce Diesel Particulate Matter Emissions from Construction Equipment AQ-3B: Reduce Diesel Particulate Matter Emissions from Material Hauling Vehicles	LTS
AQ-4: Create Excess Amounts of Operational Related Criteria Air Pollutants that Exceed SJVAPCD Thresholds of Significance or Cause or Contribute to Exceedances of the AAQS	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
AQ-5: Expose Sensitive Receptors to Substantial Air Pollutants Associated with Operation	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
AQ-6: Create Objectionable Odors from Construction	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
AQ-7: Create Objectionable Odors from Operation	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
BIOLOGICAL RESOURCES - FISHERIES				
AQUA-1: Effects on Fish Habitat and Passage for Local Fish Populations	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
AQUA-2: Effects on Salmonid Rearing Habitat	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
AQUA-3: Effects on Upstream Migration of Adult Salmonids	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
AQUA-4: Effects on Downstream Migration of Juvenile Salmonids	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
AQUA-5: Effects of In-Channel Construction Activities on Fish Species Within Reach 2B	No-Action	No Impact	--	No Impact
	Action Alternatives	--	<u>Essential Fish Habitat (Pacific Salmonids)</u> EFH-1: Avoid Loss of Habitat and Risk of Take of Species EFH-2: Minimize Loss of Habitat and Risk of Take from Implementation of Construction Activities <u>Central Valley Steelhead</u> CVS-1: Avoid Loss of Habitat and Risk of Take of Species CVS-2: Minimize Loss of Habitat and Risk of Take of Species <u>Pacific Lamprey</u> PL-1: Avoid and Minimize Effects to Species	LTS
AQUA-6: Effects of Floodplain Use By Agriculture on Fish Species Within Reach 2B	No-Action	No Impact	--	No Impact
	A	LTS	--	LTS
	B	LTS	--	LTS
	C	No Impact	--	No Impact
	D	LTS	--	LTS
	No-Action	Beneficial	--	Beneficial

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
AQUA-8: Effects on Predation of Juvenile Salmonids and Native Fish Species	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
AQUA-9: Effects on the Aquatic Food Web within Reach 2B	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
BIOLOGICAL RESOURCES - VEGETATION				
VEG-1: Substantially Alter Riparian Habitat and Other Sensitive Communities during Construction	No-Action	No impact	--	No impact
	Action Alternatives	--	Riparian Habitat and Other Sensitive Natural Communities RHSNC-1: Avoid and Minimize Loss of Riparian Habitat and Other Sensitive Natural Communities RHSNC-2: Compensate for Loss of Riparian Habitat and Other Sensitive Natural Communities Invasive Plants INV-1: Implement the Invasive Vegetation Monitoring and Management Plan	LTS
VEG-2: Substantially Alter Riparian Habitat and Other Sensitive Communities during the Operations and Maintenance Phase of the Project	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
VEG-3: Facilitate Increase in Distribution and Abundance of Invasive Plants in the Project Area	No-Action	--	Invasive Plants PEIS/R INV-1: Implement the Invasive Vegetation Monitoring and Management Plan	LTS
	Action Alternatives	--	Invasive Plants INV-1: Implement the Invasive Vegetation Monitoring and Management Plan	LTS
VEG-4: Conflict with Provisions of Local Plans in the Project Area	No-Action	No Impact	--	No Impact
	Action Alternatives	Beneficial	--	Beneficial
BIOLOGICAL RESOURCES - WILDLIFE				
WILD-1: Project Effects on Special-Status Invertebrate Species	No-Action	Beneficial	--	Beneficial

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
WILD-2: Project Effects on Special-Status Reptile Species	No-Action	LTS	--	LTS
	Action Alternatives	--	Blunt-Nosed Leopard Lizard BNLL-1: Avoid and Minimize Effects to Species Giant Garter Snake GGS-1: Avoid and Minimize Loss of Habitat for Giant Garter Snake GGS-2: Compensate for Temporary or Permanent Loss of Habitat Invasive Plants INV-1: Implement the Invasive Vegetation Monitoring and Management Plan	LTS
WILD-3: Project Effects on Special-Status Bird Species	No-Action	Beneficial	--	Beneficial
	Action Alternatives	--	Other Birds Protected by the Migratory Bird Treaty Act MBTA-1: Avoid and Minimize Effects to Species Other Nesting Raptors RAPTOR-1: Avoid and Minimize Loss of Individual Raptors RAPTOR-2: Compensate for Loss of Nest Trees Riparian Nesting Birds (Least Bell's Vireo) RNB-1: Avoid Effects to Species Swainson's Hawk SWH-1: Avoid and Minimize Impacts to Swainson's Hawk SWH-2: Compensate for Loss of Nest Trees and Foraging Habitat Tricolor Blackbird TRI-1: Avoid Nesting Colonies Cliff Swallows SWA-1: Avoid Nesting Colonies Burrowing Owl BRO-1: Avoid Loss of Species BRO-2: Minimize Impacts to Species Invasive Plants INV-1: Implement the Invasive Vegetation Monitoring and Management Plan	LTS

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
WILD-4: Project Effects on Special-Status Mammal Species	No-Action	Beneficial	--	Beneficial
	Action Alternatives	--	Special-Status Bats BAT-1: Avoid and Minimize Loss of Species BAT-2: Compensate for Loss of Habitat Fresno Kangaroo Rat FKR-1: Avoid and Minimize Effects to Species San Joaquin Kit Fox SJKF-1: Avoid and Minimize Effects to Species	LTS
WILD-5: Project Effects on Wildlife Movement Corridors	No-Action	Beneficial	--	Beneficial
	Action Alternatives	--	Riparian Habitat and Other Sensitive Natural Communities RHSNC-1: Avoid and Minimize Loss of Riparian Habitat and Other Sensitive Natural Communities RHSNC-2: Compensate for Loss of Riparian Habitat and Other Sensitive Natural Communities Essential Fish Habitat (Pacific Salmonids) EFH-1: Avoid Loss of Habitat and Risk of Take of Species EFH-2: Minimize Loss of Habitat and Risk of Take from Implementation of Construction Activities	LTS
WILD-6: Long-term Habitat Improvement in Reach 2B	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS				
CC-1: Impacts from GHG Emissions Associated with Project Construction	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
CC-2: Impacts from GHG Emissions Associated with Project Operation	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
CC-3: Changes in Land Use That Result in a Net Increase in GHG Emissions	No-Action	No Impact	--	No Impact
	Action Alternatives	Beneficial	--	Beneficial

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
CULTURAL RESOURCES				
CUL-1: Effects on Archaeological Resources from Ground Disturbing Activities during Construction	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	CUL-1A: Comply with Section 106 of the NHPA or Equivalent CUL-1B: Conduct Subsurface Testing and/or Archaeological Monitoring in Proximity to Identified Sites or Areas of Sensitivity CUL-1C: Halt Work in the Event of An Archaeological Discovery CUL-1D: Plan an Intentional Site Burial Preservation in Place CUL-1E: Avoid Soil Borrowing in the Vicinity Known Archaeological Resources	LTS
CUL-2: Effects on Historical Properties Listed or Eligible for Listing in the National or California Register	No-Action	No Impact	--	No Impact
	A	No Impact	--	No Impact
	B	No Impact	--	No Impact
	C	PS	CUL-3: Follow the Secretary of the Interior's Standards for the Treatment of Historic Properties	LTS
	D	PS		LTS
CUL-3: Effects on Cultural Resources during the Operations and Maintenance Phase of the Project	No-Action	PS	--	PS
	Action Alternatives	LTS	--	LTS
GEOLOGY AND SOILS				
GEO-1: Effects on Mineral and Soils Resources	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
GEO-2: Soil Erosion Effects	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
GEO-3: Adverse Soil Conditions	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
GEO-4: Adverse Seismicity Effects	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact
HYDROLOGY - FLOOD MANAGEMENT				
FLD-1: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding	No-Action	PS	--	PS
	Action Alternatives	LTS	--	LTS
FLD-2: Substantially Reduce Opportunities For Levee and Flood System Facilities Inspection and Maintenance	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
FLD-3: Substantially Alter Existing Drainage Patterns or Substantially Increase the Rate or Amount of Surface Runoff in a Manner Which Would Result in Flooding On- or Off-Site	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
FLD-4: Placement of Structures Within a 100-Year Flood Hazard Area that Would Adversely Impede or Redirect Flood Flows	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
HYDROLOGY - GROUNDWATER				
GRW-1: Temporary Construction-Related Effects on Groundwater Quality	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	GRW-1A: Prepare and Implement a Stormwater Pollution Prevention Plan GRW-1B: Prepare and Implement a Construction Groundwater Management Plan	LTS
GRW-2: Long-term Changes in Groundwater Quality	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
GRW-3: Changes in Groundwater Levels	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
GRW-4: Changes in Groundwater Recharge	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
HYDROLOGY - SURFACE WATER RESOURCES AND WATER QUALITY				
GEM-1: Substantially Altering the Existing Drainage Pattern, Including Alteration of the Course of the River, in a Manner Which Would Result in Substantial On- or Off-Site Erosion	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
GEM-2: Increased Aggradation or Degradation that Causes a Substantial Increase in Channel Instability within Reach 2B.	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
GEM-3: Increases in Lateral Erosion that Could Damage Existing and/or Proposed Levees or Other Infrastructure within Reach 2B	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
GEM-4: Short- and Long-Term Increases in Sediment Load that Could Cause Substantial Increases in Channel Instability in Downstream Reaches	No-Action	LTS	--	No Impact
	Action Alternatives	LTS	--	LTS
SWQ-1: Construction-Related Effects on Water Quality	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	SWQ-1: Develop & Implement SWPPP	LTS
SWQ-2: Long-Term Effects on Water Quality from Mobilization of Mendota Pool Sediments	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
SWQ-3: Long-Term Effects on Water Quality from Floodplain Inundation of Prior Agricultural Soils	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	SWG-3: Minimize Use of Pesticide and Herbicide Contaminated Soil	LTS
SWQ-4: Long-Term Effects on Water Quality from Agricultural Practices Within the New Floodplain	No-Action	No Impact	--	No Impact
	A	LTS	--	LTS
	B	LTS	--	LTS
	C	No Impact	--	No Impact
	D	LTS	--	LTS
HYDROLOGY - WETLANDS AND AQUATIC RESOURCES				
WET-1: Fill, Fragment, Isolate, Divert, or Substantially Alter Potentially Jurisdictional Wetlands or Other Waters during Construction	No-Action	No Impact	--	No Impact
	Action Alternatives	--	Waters of the United States/Waters of the State WUS-1: Identify and Quantify Wetlands and Other Waters of the United States WUS-2: Obtain Permits and Compensate for Any Loss of Wetlands and Other Waters of the United States/Waters of the State	LTS
WET-2: Fill, Fragment, Isolate, Divert, or Substantially Alter Potentially Jurisdictional Wetlands or Other Waters during the Operations and Maintenance Phase	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
WET-3: Conflict with Provisions of Local or Regional Plans Regarding Conservation Lands	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
LAND USE PLANNING AND AGRICULTURAL RESOURCES				
LU-1: Removal of Land from Agricultural Production	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	LU-1: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
LU-2: Conversion of Designated Farmland to Non-Agricultural Uses	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	LU-2: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU
LU-3: Conflict with Williamson Act Contracts	No-Action	No Impact	--	No Impact
	Action Alternatives	Significant	LU-3: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU
LU-4: Degradation of Agricultural Land Productivity due to Seepage	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
LU-5: Conflict with Applicable Land Use Plans Regarding Agricultural Lands	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	LU-5: Notify County Planning Agencies of General Plan and Zoning Ordinance Inconsistencies	LTS
LU-6: Diminishment of Agricultural Production by Increased Disease	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
NOISE AND VIBRATION				
NOI-1: Exposure of Sensitive Receptors to Temporary Construction Noise	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	NOI-1: Reduce Temporary and Short-Term Noise Levels from Construction-Related Equipment Near Sensitive Receptors	LTS
NOI-2: Exposure of Sensitive Receptors to Temporary Construction Vibration	No-Action	No Impact	--	No Impact
	A	LTS	--	LTS
	B	LTS	--	LTS
	C	PS	NOI-2: Minimize Vibration Related Effects	LTS
	D	PS		LTS
NOI-3: Increased Off-Site Vehicular Traffic Noise Due to Construction Related Trips	No-Action	LTS	--	LTS
	Action Alternatives	PS	NOI-3: Reduce Temporary Noise Levels from Construction-Related Traffic Increases Near Sensitive Receptors	LTS
NOI-4: Noise Effects Due to Operations and Maintenance Activities	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
PALEONTOLOGY				
PAL-1: Possible Damage to or Destruction of Unique Paleontological Resources	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	PAL-1: Stop Work If Paleontological Resources Are Encountered During Earthmoving Activities and Implement Recovery Plan	LTS

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
PUBLIC HEALTH AND HAZARDOUS MATERIALS				
HAZ-1: Creation of a Substantial Hazard through the Routine Transport, Use, or Disposal of Hazardous Materials or through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
HAZ-2: Increased Exposure to Hazardous Materials of People Residing or Working in the Project Area	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	HAZ-2A: Follow General Hazardous Materials Guidelines HAZ -2B: Properly Dispose of Hazardous Building Components HAZ -2C: Properly Dispose of Pesticides HAZ -2D: Properly Manage Discolored or Odiferous Soils HAZ -2E: Properly Remove Underground Storage Tanks	LTS
HAZ-3: Creation of a Substantial Hazard from Disturbance of Known Hazardous Material Sites	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	HAZ-3: Minimize Disturbance to Known Hazardous Material Site	LTS
HAZ-4: Creation of a Substantial Hazard from Mobilization of Soil Contaminants on the Floodplain	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	HAZ-4: Minimize Use of Pesticide and Herbicide Contaminated Soil	LTS
HAZ-5: Exposure of People to Increased Risk of Diseases	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	HAZ-5A: Minimize Exposure to Potential West Nile Virus Vectors HAZ-5B: Minimize Exposure to Potential Hantavirus Vectors HAZ-5C: Minimize Exposure to Valley Fever	LTS
HAZ-6: Creation of a Substantial Hazard from Decommissioned Wells	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	HAZ-6: Minimize the Disturbance of Idle or Abandoned Wells	LTS
HAZ-7: Increased Hazardous Emissions or Handling of Hazardous Materials, Substances, or Wastes within One-Quarter Mile of a School	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
HAZ-8: Exposure of People or Structures to a Substantial Risk of Loss, Injury, or Death involving Wildland Fires	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
HAZ-9: Creation of a Substantial Hazard in Areas Designated by Airport Land Use Plans, within 2 miles of an Airport, or in the Vicinity of a Private Airstrip	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact
HAZ-10: Impairment of the Implementation or Physical Interference with an Adopted Emergency Response or Emergency Evacuation Plan	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact
RECREATION				
REC-1: Construction-Related Effects on Recreation Opportunities and Facilities	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	REC-1: Minimize Construction Effects on Recreation Uses	LTS
REC-2: Permanent Displacement of Existing Recreation Uses and Access Restrictions from Project Facilities	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	REC-2: Establish Boat Portage Facilities Around Project Facilities	LTS
REC-3: Effects on Recreational Angling at Project Structures	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
REC-4: Effects of Aquatic Habitat Improvements on Recreational Angling	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
REC-5: Effects of Increased Flows on Recreation Opportunities and Facilities	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
REC-6: Conflicts with Recreation Goals and Policies	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
SOCIOECONOMIC AND ECONOMICS				
ECON-1: Change in Agricultural Production Values	No-Action	LS	--	LS
	Action Alternatives	LS	--	LS
ECON-2: Effects on the Regional Economy from Changes in Agricultural Production	No-Action	LS	--	LS
	Action Alternatives	LS	--	LS
ECON-3: Effects on the Regional Economy from Construction and Operations and Maintenance Spending	No-Action	No Impact	--	No Impact
	Action Alternatives	Beneficial	--	Beneficial

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
ECON-4: Effects on Local Tax Revenues	No-Action	No Impact	--	No Impact
	Action Alternatives	LS	--	LS
ECON-5: Change in Population Growth and Housing Demand	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
ECON-6: Losses to the Lower San Joaquin Valley Levee District	No-Action	LS	--	LS
	Action Alternatives	LS	--	LS
TRANSPORTATION AND TRAFFIC				
TRA-1. Potential to Cause an Increase in Traffic which is Substantial in Relation to the Existing Traffic Load and Capacity of the Roadway System	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
TRA-2. Potential to Exceed, Either Individually or Cumulatively, a LOS Standard Established by the County Congestion Management Agency for Designated Roads or Highways	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
TRA-3. Potential to Substantially Increase Hazards to a Design Feature or Increase Incompatible Uses	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
TRA-4. Potential to Result in Inadequate Emergency Access	No-Action	PSU	--	PSU
	A	PS	TRA-4A: Provide Temporary Roadway and Crossing at San Mateo Avenue	SU
	B	PS	TRA-4B: Use Construction Sequencing to Provide Continuous Emergency Access at Drive 10 ½	SU
	C	PS	TRA-4A: Provide Temporary Roadway and Crossing at San Mateo Avenue	SU
	D	PSU	--	PSU
UTILITIES AND SERVICE SYSTEMS				
UTL-1: Increased Need for New or Physically Altered Governmental Facilities due to Reduced Emergency Access and Increased Emergency Response Times	No-Action	LTS	--	LTS
	Action Alternatives	LTS	--	LTS
UTL-2: Potential For Generation of Solid Waste in the Project Area in Excess of Permitted Landfill Capacity	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
UTL-3: Potential For Noncompliance with Federal, State, and Local Statutes and Regulations Related to Solid Waste	No-Action	No Impact	--	No Impact
	Action Alternatives	No Impact	--	No Impact
UTL-4: Potential For Insufficient Water Supply Resources in the Project Area	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
UTL-5: Potential for New or Physically Altered Utility Infrastructure to Conflict With Any Applicable Land Use Plan, Policy, or Regulation	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
UTL-6: Effects on Energy Resources	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
UTL -7: Reduced Capacity of Existing Operational Diversion Facilities	No-Action	No Impact	--	No Impact
	Action Alternatives	LTS	--	LTS
VISUAL RESOURCES				
VIS-1: Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings	No-Action	No impact	--	No impact
	Action Alternatives	PS	VIS-1: Minimize Visual Disruption from Construction Activities	LTS
VIS-2: Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing	No-Action	Beneficial	--	Beneficial
	Action Alternatives	Beneficial	--	Beneficial
VIS-3: Long-term Changes in the Visual Character or Quality of the Mendota Pool Park	No-Action	No impact	--	No impact
	A	No impact	--	No impact
	B	No impact	--	No impact
	C	LTS	--	LTS
	D	LTS	--	LTS
VIS-4: Long-term Changes in the Visual Character or Quality of the Mendota Dam Area	No-Action	No impact	--	No impact
	A	No impact	--	No impact
	B	No impact	--	No impact
	C	LTS	--	LTS
	D	LTS	--	LTS
VIS-5: Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area	No-Action	No impact	--	No impact
	A	LTS	--	LTS
	B	LTS	--	LTS
	C	No impact	--	No impact
	D	No impact	--	No impact

Table S-3. Summary of Impacts and Mitigation Measures

IMPACTS	ALTERNATIVE	LEVEL OF SIGNIFICANCE BEFORE MITIGATION	MITIGATION MEASURES / CONSERVATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION / CONSERVATION MEASURE
VIS-6: Substantial Changes in Light or Glare	No-Action	No Impact	--	No Impact
	Action Alternatives	PS	VIS-6: Require Conformance to Lighting Standards	LTS

Key:

AAQS = Ambient Air Quality Standards
DWR = California Department of Water Resources
GHG = greenhouse gases
LOS = Level of Service
LS = less than substantial
LTS = less than significant
NHPA = National Historic Preservation Act
PS = potentially significant
PSU = potentially significant and unavoidable
SJVAPCD = San Joaquin Valley Air Pollution Control District
SU = significant and unavoidable
SWPPP = stormwater pollution prevention plan

Table S-4. Summary of Impacts for Environmental Justice

EFFECTS ON ENVIRONMENTAL JUSTICE COMMUNITIES OF CONCERN	ALTERNATIVE	DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS ON MINORITY AND LOW-INCOME POPULATIONS
EJ-1: Removal of Land from Agricultural Production	No-Action	No
	Action Alternatives	Yes
EJ-2: Changes in Regional Activity Attributed to Agricultural Production	No-Action	No
	Action Alternatives	Yes
EJ-3: Changes in Regional Activity Attributed to Project Construction and Operations	No-Action	No
	Action Alternatives	No
EJ-4: Construction-related Emissions of Criteria Air Pollutants and Precursors and Exposure of Sensitive Receptors to Substantial Concentrations of Toxic Air Contaminants	No-Action	No
	Action Alternatives	Yes
EJ-5: Conflicts with Adopted Land Use Plans, Goals, Policies, and Ordinances	No-Action	No
	Action Alternatives	No
EJ-6: Conversion of Designated Farmland to Nonagricultural Uses and Cancellation of Williamson Act Contracts	No-Action	Yes
	Action Alternatives	Yes
EJ-7: Physical Impacts on Resources Used for Subsistence Consumption (Fish and Wildlife)	No-Action	No
	Action Alternatives	No
EJ-8: Reduced Inadequate or Emergency Access	No-Action	No
	Action Alternatives	No

Table S-5. Impacts of Action Alternatives with the Potential to Result in a Cumulatively Considerable Incremental Contribution to a Significant Cumulative Impact

RESOURCE AREA	IMPACT
Cultural Resources	Disturbance or Destruction of Cultural Resources
Environmental Justice	Regional economic factors that are adversely affecting minority and/or low-income populations
Land Use Planning and Agriculture	Conversion of designated Farmland to nonagricultural uses
Socioeconomics and Economics	Substantial short term economic impacts associated with losses in agricultural production
Transportation and Traffic	Temporary or permanent road closure(s) that could affect emergency access or emergency response times

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RESTORATION PROGRAM