SAN JOAQUIN RIVER
RESTORATION PROGRAM

Water Year 2010 Interim Flows Project

Draft

Environmental Assessment and Finding of No Significant Impact/ Initial Study and Mitigated Negative Declaration




June 2009

SAN JOAQUIN RIVER RESTORATION PROGRAM

Bureau of Reclamation
2800 Cottage Way, MP-170
Sacramento, Calif. 95825-1898

Department of Water Resources
3374 E. Shields Avenue
Fresno, Calif. 93726-6911

Public Circulation of the Draft Environmental Assessment/Proposed Finding of No Significant Impact Under NEPA and Notice of Availability and Intent to Adopt an Initial Study/Draft Mitigated Negative Declaration Under CEQA for the Water Year 2010 Interim Flows Project

June 3, 2009

To: All Responsible and Trustee Agencies, Interested Parties, and Organizations

The U.S. Department of the Interior, Bureau of Reclamation and the California Department of Water Resources (DWR) announce the release of an Environmental Assessment, Proposed Finding of No Significant Impact, Initial Study, and Draft Mitigated Negative Declaration (EA/FONSI/IS/MND) for the San Joaquin River Restoration Program's (SJRRP) Water Year 2010 (WY 2010) Interim Flows Project. The document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The EA/FONSI/IS/MND is a joint document that describes the direct, indirect, and cumulative effects of the Proposed Action, the WY 2010 Interim Flows Project, and the No-Action Alternative on the environment.

Proposed Action/Proposed Project Description: Reclamation is proposing to temporarily change Friant Dam operations in WY 2010 (October 1, 2009, through September 30, 2010) as specified in the Stipulation of Settlement (Settlement) in *NRDC et al. v. Kirk Rodgers et al*. The Interim Flows would be conveyed down the San Joaquin River channel and, potentially, down the Eastside and Mariposa bypasses to the Sacramento-San Joaquin River Delta (Delta). Under the Proposed Action, flows would be recaptured by existing water diversion facilities along the San Joaquin River and/or in the Delta for agricultural, municipal and industrial, or fish and wildlife uses, to the extent possible. Potential diversion locations for recapturing WY 2010 Interim Flow releases are Mendota Pool, Arroyo Canal, the Lone Tree Unit of the Merced National Wildlife Refuge (NWR), the East Bear Creek Unit of the San Luis NWR, and Central Valley Project and State Water Project Delta export facilities. The Proposed Action also includes the implementation of environmental commitments to avoid, reduce, or minimize impacts to special-status species, a vehicular traffic detour plan, a recreation outreach program, and the implementation of a groundwater seepage monitoring and management plan.

The purpose of the Proposed Action is to implement the provisions of the Settlement related to the release of Interim Flows for WY 2010. As described in the Settlement, the purpose of the Interim Flows is to collect relevant data concerning flows, temperatures, fish needs, seepage losses, recirculation, and recapture and reuse. The SJRRP Implementing Agencies, which include Reclamation, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, DWR, and the California Department of Fish and Game, will conduct a variety of monitoring and study actions for the WY 2010 Interim Flow release period.

Project Location: WY 2010 Interim Flows would be released from Friant Dam near the City of Fresno in Fresno County, California. The project would have an effect on the following areas: Millerton Lake upstream from Friant Dam, the San Joaquin River from Friant Dam to the Merced River confluence including the Eastside and Mariposa bypasses, the San Joaquin River from the Merced River confluence to the Delta, the Delta, and Central Valley Project/State Water Project facilities and water service areas.

Listed Hazardous Sites: No sites listed under Section 65962.5 of the Government Code are located within or in the immediate adjacent to the project location.

Intent to Adopt: Pursuant to the provisions of Title 14, Section 15072 of the California Code of Regulations, DWR gives notice of its intent to adopt the Mitigated Negative Declaration for the WY 2010 Interim Flows Project. The Draft Mitigated Negative Declaration finds that the Proposed Action/Proposed Project will not have a significant effect on the environment with mitigation incorporated and that preparation of an environmental impact report is not required.

Copies of the Document, Public Review Period, and Submitting Comments: The EA/FONSI/IS/MND is available for public review and comment for 30 days. Written comments must be received at one of the following physical or e-mail addresses below no later than close of business (5 p.m., Pacific Daylight Time) Monday, July 6, 2009:

Mr. Jason Phillips SJRRP Program Manager U.S. Bureau of Reclamation 2800 Cottage Way, MP-170 Sacramento, CA 95825-1898 **InterimFlows@restoresjr.net**	OR	Mr. Kevin Faulkenberry DWR SJRRP Program Manager Department of Water Resources 3374 E. Shields Avenue Fresno, CA 93726 **faulkenb@water.ca.gov**

The EA/FONSI/IS/MND may be reviewed during normal business hours (from 8 a.m. to 5 p.m.) at the addresses above and at Reclamation's South-Central California Area Office at 1243 N Street, Fresno, California. The EA/FONSI/IS/MND is also available on the SJRRP web site at **www.restoresjr.net** or Reclamation's web site at **www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=3612**. If you would like to request a compact disk containing the document, please contact Ms. Margaret Gidding at 916-978-5104 or **mgidding@usbr.gov**.

To learn more about the SJRRP and the WY 2010 Interim Flows Project visit www.restoresjr.net.

Finding of No Significant Impact

Water Year 2010 Interim Flows Project

SAN JOAQUIN RIVER
RESTORATION PROGRAM

June 2009

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MID-PACIFIC REGION
SACRAMENTO, CALIFORNIA

FINDING OF NO SIGNIFICANT IMPACT

WATER YEAR 2010 INTERIM FLOWS PROJECT
SAN JOAQUIN RIVER RESTORATION PROGRAM

FONSI-09-05-MP

Recommended by: _____ **Date:** _____

Brad Hubbard
Natural Resources Specialist
San Joaquin River Restoration Program
Mid-Pacific Region

Concurred by: _____ **Date:** _____

Alicia Gasdick
Project Manager
San Joaquin River Restoration Program
Mid-Pacific Region

Concurred by: _____ **Date:** _____

Mike Chotkowski
Regional Resources Officer
Environmental Affairs Division
Mid-Pacific Region

Approved by: _____ **Date:** _____

Jason R. Phillips
Program Manager
San Joaquin River Restoration Program
Mid-Pacific Region

PROPOSED ACTION

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation), proposes to temporarily change Friant Dam operations in Water Year 2010 (WY 2010) (October 1, 2009, to September 30, 2010) to release Interim Flows from Friant Dam into the San Joaquin River and potentially downstream as far as the Sacramento-San Joaquin Delta (Delta). The Interim Flows would be recaptured by existing water diversion facilities along the San Joaquin River and/or in the Delta for agricultural, municipal and industrial, or fish and wildlife uses. Potential diversion locations for recapturing Interim Flow releases include the Mendota Pool, Arroyo Canal, the Lone Tree Unit of the Merced National Wildlife Refuge (NWR), the East Bear Creek Unit of the San Luis NWR, and the Central Valley Project and State Water Project Delta export facilities. The Proposed Action is specified in the Stipulation of Settlement (Settlement) in *NRDC, et al. v. Kirk Rodgers, et al.,* and is part of the San Joaquin River Restoration Program (SJRRP). The Proposed Action is located primarily in Fresno, Madera, and Merced counties and involves no construction activities.

The purpose of the Proposed Action is to implement the provisions of the Settlement pertaining to WY 2010 and to collect relevant data to guide future releases of Interim Flows and Restoration Flows under the SJRRP. Interim Flows are specified in the Settlement, which was approved by the United States District Court in October 2006. The action will facilitate collection of relevant data to guide future releases of Interim Flows and Restoration Flows under the SJRRP. Public Law 111-11 authorizes Reclamation to implement the WY 2010 Interim Flows consistent with the Settlement.

FINDINGS

In accordance with Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA (40 Code and Federal Regulations (CFR) Parts 1500-1508), the Mid-Pacific Region of Reclamation finds that the Proposed Action is not a major Federal action that will significantly impact the quality of the human environment. Therefore, an Environmental Impact Statement is not required for implementing the Proposed Action. This Finding of No Significant Impact (FONSI) is supported by the attached Environmental Assessment (EA), *Water Year 2010 Interim Flows Project*.

The following factors support this determination:

1. The Proposed Action will not significantly impact aesthetics. WY 2010 Interim Flows will have minimal affect on scenic vistas and the visual quality of Millerton Lake and the San Joaquin River. The Proposed Action will have no effect on scenic resources, nor would it create any substantial source of light or glare.

2. The Proposed Action will not significantly impact agricultural resources. During temporary periods of WY 2010, Interim Flows may inundate some areas of

productive farmland and active grazing lands in the bypasses, but these flows would be similar to existing conditions. The Proposed Action will not convert lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses, nor require any zoning changes or result in conflicts with Williamson Act contracts.

3. The Proposed Action will not significantly impact air quality. No applicable air quality plan or air quality standard would be violated. Project-related toxic air contaminant emissions from off-road diesel equipment would not be anticipated to expose sensitive receptors to substantial pollutant concentrations because the use of mobilized equipment would be temporary and diesel particulate matter is highly dispersive. The Proposed Action would also not create, exacerbate, or change existing objectionable odors that would affect a substantial number of people.

4. The Proposed Action will not significantly impact terrestrial biological resources after implementation of a mitigation measure to control and manage the spread of invasive plant species. WY 2010 Interim Flows will increase the quantity of water flowing down the San Joaquin River. These hydrologic alterations have the potential to result in the spread of the following five invasive species already present in the San Joaquin River system: red sesbania, salt cedar, giant reed, and Chinese tallow. The spread of these invasive species has the potential to impact existing riparian habitat and sensitive natural communities. For mitigation, Reclamation shall monitor these species along affected portions of the San Joaquin River and bypass system (before and after WY 2010 Interim Flows) and control and manage these species, as specified in the Invasive Vegetation Monitoring and Management Plan included as Appendix F, in the EA. With mitigation, the impacts would be less than significant.

5. The Proposed Action will not significantly impact fisheries resources. Regulated flows in the San Joaquin River upstream of the Merced River resulting from WY 2010 Interim Flows will be similar to or greater than those in the No-Action Alternative under all potential hydrologic conditions. Changes in the Vernalis Adaptive Management Plan (VAMP) contribution releases from tributary reservoirs will not affect the ability to meet instream fish and water quality flow requirements in the Merced, Tuolumne, or Stanislaus rivers. The Proposed Action's effects on the Delta will be consistent with the analysis contained in the US Fish and Wildlife Service (USFWS) 2008 Operations Criteria and Plan (OCAP) Biological Opinion (BO).

6. Reclamation will comply with the Section 106 process as outlined in the regulations at 36 CFR Part 800, prior to implementing the Proposed Action.

7. The Proposed Action will not significantly impact geology and soils. The WY 2010 Interim Flows would not increase the risk of seismic activity or related ground failure or landslides, but could potentially increase stream soil erosion

characteristics and change geomorphologic characteristics. A temporary increase in groundwater pumping and a related increase in aquifer compaction could occur. The WY 2010 Interim Flows would have no impact on the risks to life or property due to expansive soils. The WY 2010 Interim Flows would also have no impact on wastewater disposal systems and the demand for wastewater disposal.

8. The Proposed Action will not significantly impact hazards and hazardous materials. The Proposed Action would not involve any construction or the routine transport or disposal of any hazardous materials, with the exception of herbicides applied by hand during invasive plant species control. The chance of a spill is very low, and the small quantities that could be applied would not create a significant hazard to the public or the environment through routine transport, use, or disposal of these chemicals. Implementing the Proposed Action will not involve any construction that would affect hazardous materials sites or affect existing airport use or air traffic patterns. The Proposed Action will not impair or interfere with implementation of adopted emergency response plans or emergency evaluations plans.

9. The Proposed Action will not significantly impact hydrology and water quality. The Proposed Action would not substantially deplete groundwater supplies or interfere with groundwater recharge because of a decrease in deliveries to CVP. WY 2010 Interim Flows would follow existing channels and would not increase the rate or amount of surface runoff. WY 2010 Interim Flows would also not exceed existing channel capacity and would not include the release of flows in addition to flood flows, if any.

10. The Proposed Action will not significantly impact land use and planning. Under the WY 2010 Interim flows, San Mateo Road and Dan McNamara Road could be temporarily inundated with water, temporarily affecting local circulation, but the Proposed Action includes creation and implementation of a detour plan that would provide convenient and parallel roadway access and avoid physically dividing an established community. The Proposed Action will not conflict with any applicable land use plan, policy, or regulation of an agency because the WY 2010 Interim flows will be temporary and periodic and would not cause physical changes to land.

11. The Proposed Action will have no impact to mineral resources. The flows released under the Proposed Action would not be of a sufficient quantity to impact mining operations and reclamation activities.

12. The Proposed Action will not significantly impact noise. Noise sources related to implementing the Proposed Action would be from plant survey and removal activities that are scheduled to begin in spring and fall 2011, respectively. Increased recreation and vegetation surveys would not result in noise levels in excess of applicable standards because project activities are limited to daylight hours, which are normally exempted from local noise standards. The Proposed

Action will not create a substantial permanent increase in ambient noise levels because noise resulting from vegetation removal, vegetation surveys, and minor increases in the number of recreationists under the Proposed Action will not cause substantial permanent increases in noise levels.

13. The Proposed Action will not significantly impact public services. Implementing the Proposed Action has the potential for a temporary indirect impact on public services by increasing recreation opportunities along the San Joaquin River. Reaches 1 and 2, which have the greatest public access, already have instream flows, so additional WY 2010 Interim Flows are not expected to significantly increase recreational use in these areas. Therefore, additional fire protection and police protection would not be needed, and demand on parks is not expected to substantially increase. Implementing the Proposed Action will not change demands on schools because the Proposed Action does not involve housing or indirectly cause housing to be built.

14. The Proposed Action will not significantly impact recreation. Interim Flows under the Proposed Action will enhance the use of the San Joaquin River by boaters (primarily canoers and kayakers) by potentially increasing the time that flow would be in ideal flow ranges and extending boatable flows in the river.

15. The Proposed Action will not significantly impact transportation and traffic. The impact on traffic and the levels of service for roads, highways, and intersections would be less than significant because the number of people visiting the area by car is not expected to increase. With the implementation of appropriate detours, inundation of San Mateo Road and Dan McNamara Road will not result in inadequate emergency services. The Proposed Action would have no impact on air traffic patterns, road hazards, or parking capacity.

16. The Proposed Action will not significantly impact utilities and service systems. WY 2010 Interim Flows would have no impact on wastewater treatment requirements, wastewater treatment demand, water treatment facilities, wastewater treatment facilities, storm drainage facilities, or solid waste generation. The Proposed Action would have a less-than-significant impact on water deliveries because potential reduction in water deliveries to the Friant Division long-term contractors would be limited to the 1-year duration of the project.

17. The Proposed Action will not have any socioeconomic impacts. The Proposed Action involves no construction activities and is temporary. Existing population and housing trends, employment and labor force trends, prominent business and industry types, and government and finance conditions within the study area will not be affected by the Proposed Action.

18. The Proposed Action will not affect any Indian Trust Assets.

19. The Proposed Action will not disproportionately impact minority and disadvantaged populations or communities. Because of the limited duration (1 year) and extent of the Proposed Action, and the findings that all impacts to related resources areas are less than significant or have no effect whatsoever, it is concluded that the Federal Action under consideration will not disproportionately burden minority groups, low-income populations or Native American Tribes.

20. The Proposed Action has been developed and will be managed in such a way as to avoid potentially significant impacts to listed species. On May 22, 2009, Reclamation requested concurrence from U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) that the Proposed Action is not likely to adversely affect listed species.

Draft

Mitigated Negative Declaration

Water Year 2010 Interim Flows Project

SAN JOAQUIN RIVER
RESTORATION PROGRAM

June 2009

State of California

The Resources Agency

DEPARTMENT OF WATER RESOURCES

DRAFT MITIGATED NEGATIVE DECLARATION

Water Year 2010 Interim Flows Project – San Joaquin River Restoration Program

Lead Agency: California Department of Water Resources

Project Description: The U.S. Department of the Interior, Bureau of Reclamation, would temporarily change Friant Dam operations in Water Year 2010 (WY 2010) (October 1, 2009 to September 30, 2010) to release Interim Flows from Friant Dam into the San Joaquin River and potentially downstream as far as the Sacramento-San Joaquin Delta (Delta). The WY 2010 Interim Flows would be recaptured by existing water diversion facilities along the San Joaquin River and/or in the Delta for agricultural, municipal and industrial, or fish and wildlife uses. Potential diversion locations for recapturing WY 2010 Interim Flow releases are Mendota Pool, Arroyo Canal, the Lone Tree Unit of the Merced National Wildlife Refuge (NWR), the East Bear Creek Unit of the San Luis NWR, and Central Valley Project and State Water Project Delta export facilities. The Proposed Project is specified in the Stipulation of Settlement (Settlement) in *NRDC, et al. v. Kirk Rodgers, et al.* and is part of the San Joaquin River Restoration Program (SJRRP). The Proposed Project is located primarily in Fresno, Madera, and Merced counties and would involve no construction activities.

The purpose of the Proposed Project is to implement the provisions of the Settlement pertaining to WY 2010 Interim Flows, and collect relevant data to guide future releases of Interim Flows and Restoration Flows under the SJRRP. The need for the project is specified in the Settlement, which is court-mandated and requires Interim Flows to be released under a specific water release schedule in WY 2010.

Consistent with a Memorandum of Understanding with the Settling Parties and the State, the California Natural Resources Agency will play a major role in funding and implementing actions called for in the Settlement and in the Act. The California Department of Water Resources (DWR), along with several other State organizations, will implement actions needed to route WY 2010 Interim Flows through the Restoration Area. Because of DWR's greater role in the SJRRP, DWR will serve as the lead agency under the California Environmental Quality Act (CEQA).

Proposed Finding: An Initial Study (IS) has been prepared to assess the Proposed Project's potential impacts on the physical environment and the significance of those impacts. Based on the results of the IS, the Proposed Project would not have any significant impacts on the environment once mitigation measures were implemented. Preparation of an Environmental Impact Report is not required. This finding also supports the State Water Resources Control

Board's decision that the Proposed Project would have no unreasonable effects on fish, wildlife, or other instream beneficial uses and would not injure any legal user to the water under California Water Code Section 1725 et. seq. , which is exempt from the requirements of CEQA pursuant to Water Code Section1729, in conjunction with a petition under Section 1707 to change the purpose of use of waters.

Basis for Proposed Finding: The proposed finding is supported by the following conclusions in the IS:

1. The Proposed Project would result in no impacts to cultural resources, mineral resources, or population and housing.

2. The Proposed Project would result in either no impacts or impacts that are less than significant to aesthetics, agricultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, fisheries land use and planning, noise, public services, recreation, transportation and traffic, and utilities and service systems.

3. The Proposed Project would result in impacts that are less than significant on air quality.

4. The Proposed Project would result in no impacts, impacts that are less than significant (beneficial and adverse), and impacts that are less than significant with mitigation on terrestrial biological resources. WY 2010 Interim Flows would substantially increase the quantity of water flowing down the San Joaquin River. These hydrologic alterations would introduce and spread five invasive species already present in the river system: red sesbania, salt cedar, giant reed, sponge plant, and Chinese tallow. For mitigation, Reclamation shall monitor these species along affected portions of the San Joaquin River and bypass system (before and after WY 2010 Interim Flows) and control and manage these species as specified in the Invasive Vegetation Monitoring and Management Plan included as Appendix F in the IS. With mitigation, the impacts would be less than significant.

5. The Proposed Project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, reduce the number or restrict the range of a special-status species, or eliminate important examples of California history or prehistory.

6. The Proposed Project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

7. The Proposed Project would not have environmental effects that are individually limited but cumulatively considerable.

8. The Proposed Project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

9. No substantial evidence exists that the Proposed Project would have a significant negative or adverse effect on the environment.

10. The Proposed Project would incorporate all applicable mitigation measures, as listed below and fully described in the IS.

The following mitigation measures will be implemented as part of the project to avoid or minimize potential environmental impacts. Implementation of these mitigation measures would reduce the potential environmental impacts of the Proposed Project to less-than-significant levels:

- **Mitigation Measure Bio-1:** ***Implement an Invasive Vegetation Management Plan.*** Reclamation and DWR shall monitor red sesbania, salt cedar, giant reed, and Chinese tallow along affected portions of the San Joaquin River and bypass system (before and after WY 2010 Interim Flows) and control and manage these species as specified in the Invasive Species Monitoring and Management Plan included as Appendix F.

In accordance with Section 21082.1 of CEQA, DWR has independently reviewed and analyzed the IS and Mitigated Negative Declaration (MND) for the Proposed Project and finds that the IS and MND reflect the independent judgment of DWR. The lead agency further finds that the project mitigation measures will be implemented as stated in the IS and MND. This MND is filed in accordance with CEQA and State CEQA Guidelines.

Paula J. Landis
California Department of Water Resources

6-1-09
Date

DRAFT

Environmental Assessment/Initial Study

Water Year 2010 Interim Flows Project

SAN JOAQUIN RIVER
RESTORATION PROGRAM

June 2009

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Appendices

Tables

Figures

List of Abbreviations and Acronyms

ºF	degrees Fahrenheit
AAQS	ambient air quality standards
AB	Assembly Bill
Act	San Joaquin River Restoration Settlement Act
APE	area of potential effect
ARB	California Air Resources Board
Banks	Harvey O. Banks
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin river basins
Bay-Delta	San Francisco Bay/Sacramento-San Joaquin Delta
BNLL	blunt-nosed leopard lizard
BO	biological opinion
Cal/EPA	California Environmental Protection Agency
CALFED	CALFED Bay-Delta Program
CALFIRE	California Department of Forestry and Fire Protection
CalIPC	California Invasive Plant Council
CCID	Central California Irrigation District
CCP	comprehensive conservation plans
CCR	California Code of Regulations
CDC	Center for Disease Control and Prevention
CDFA	California Department of Food and Agriculture
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic foot per second
CH_4	methane
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
Court	U.S. Eastern District Court of California
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act

dB	decibel
dBA	A-weighted decibels
DDT	dichlorodiphenyl-trichloroethane
Delta	Sacramento-San Joaquin Delta
DFG	California Department of Fish and Game
diesel PM	particulate exhaust emissions from diesel-fueled engines
DMC	Delta-Mendota Canal
DOC	dissolved organic carbon
DOGGR	Division of Oil, Gas, and Geothermal Resources
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EA/IS	Environmental Assessment/Initial Study
Eagle Act	The Bald and Golden Eagle Protection Act
EDD	Employment Development Department
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973, as amended
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FKMCCCP	Friant-Kern Madera Canals Capacity Correction Project
FMMP	Farmland Mapping and Monitoring Program
FONSI	Finding of No Significant Impact
FPPA	Federal Farmland Protection Policy Act
FWCA	Fish and Wildlife Coordination Act
FWUA	Friant Water Users Authority
GHG	greenhouse gases
GIS	geographic information system
GSA	General Services Administration
HAP	hazardous air pollutants
Jones	C.W. “Bill” Jones
LSJLD	Lower San Joaquin Levee District
LUST	leaking underground storage tank
M&I	municipal and industrial
MAF	million acre-feet
mg/L	milligrams per liter

MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
msl	mean sea level
MT CO_2/yr	metric tons of CO2 per year
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NRCS	National Resource Conservation Service
NRDC	Natural Resources Defense Council
NWR	National Wildlife Refuge
O&M	operation and maintenance
OCAP	Operations Criteria and Plan
OES	Office of Emergency Services
PCB	polychlorinated biphenyl
PEIS/R	Program Environmental Impact Statement/Report
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
POI	point of interest
ppm	parts per million
ppt	parts per thousand
RA	Restoration Administrator
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
ROD	Record of Decision
ROG	reactive organic gases
RPA	Reasonable and Prudent Alternative
RWQCB	Regional Water Quality Control Board

Secretary	Secretary of the U.S. Department of the Interior
Settlement	Stipulation of Settlement in *NRDC, et al., v. Kirk Rodgers, et al.*
SHPO	State Historic Preservation Officer
SJRA	San Joaquin River Agreement
SJRGA	San Joaquin River Group Authority
SJRRP	San Joaquin River Restoration Program
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCC	San Luis Canal Company
SLDMWA	San Luis Delta Mendota Water Authority
SO_2	sulfur dioxide
SR	State Route
SRA	State Recreation Area
SRGA	Shorebird Research Group of the Americas
State	State of California
SWAT	Special Weapons and Tactics
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TAF	thousand acre-feet
TDS	total dissolved solids
TMDL	total maximum daily load
TPY	tons per year
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAMP	Vernalis Adaptive Management Program
VdB	vibration decibels
WA	Wildlife Area
WMA	Wildlife Management Area
WNV	West Nile virus
WY	water year

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1.0 Introduction and Statement of Purpose and Need

The San Joaquin River Restoration Program (SJRRP) was established in late 2006 to implement the Stipulation of Settlement in *NRDC, et al. v. Kirk Rodgers, et al*. (Settlement). As an initial action to guide implementation of the SJRRP, the Settlement requires that the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), modify releases from Friant Dam during water year (WY) 2010 (from October 1, 2009, to September 30, 2010). This first year of releases would allow data to be collected to better evaluate flows, temperatures, fish needs, biological effects, and seepage losses, and water recirculation, recapture, and reuse opportunities. The Proposed Action is to increase the release of water from Friant Dam for 1 year (WY 2010) in accordance with the flow schedule in Exhibit B of the Settlement (Exhibit B) and in a manner consistent with Federal, State and local laws, and future agreements with downstream agencies, entities, and landowners. The Proposed Action also includes the activities necessary to convey the flows in the San Joaquin River system to the Delta, and the monitoring activities to be conducted during the WY 2010 Interim Flow releases. The water released from Friant Dam prior to full Restoration Flows as described in the Settlement is called Interim Flows. Authorization for implementing the Settlement, including release of WY 2010 Interim Flows, is provided in the San Joaquin River Restoration Settlement Act (Act) (Public Law 111-11). The Settlement is provided as Appendix A of this document and the Act is provided as Appendix B.

Reclamation, as the lead agency under the National Environmental Policy Act (NEPA), and the California Department of Water Resources (DWR), as the lead agency under the California Environmental Quality Act (CEQA), are preparing this joint Draft Environmental Assessment/Initial Study (EA/IS), consistent with their lead roles in preparing the future Program Environmental Impact Statement/Report (PEIS/R) for the SJRRP. This EA/IS evaluates potential environmental consequences associated with the estimated change in flow in the San Joaquin River, as a result of the Proposed Action.

This EA/IS describes and evaluates potential environmental consequences resulting from Interim Flows in the San Joaquin River beginning October 1, 2009, to September 30, 2010 (WY 2010 Interim Flows), beginning October 1, 2009, through November 20, 2009, and resuming February 1, 2010, through September 30, 2010, as stipulated in Paragraph 15 of the Settlement. Also described are the potential locations and mechanisms for recapturing WY 2010 Interim Flows within the San Joaquin River from Friant Dam to the confluence of the Merced River (Restoration Area), and in the Sacramento-San Joaquin Delta (Delta). In addition, associated activities that may be undertaken to collect relevant data during WY 2010 are discussed.

1.1 Background

In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit challenging the renewal of long-term water service contracts between the United States and the Central Valley Project (CVP) Friant Division contractors. After more than 18 years of litigation of this lawsuit, known as *NRDC, et al. v. Kirk Rodgers, et al.*, a Settlement was reached. On September 13, 2006, the Settling Parties, including NRDC, Friant Water Users Authority (FWUA), and the U.S. Departments of the Interior and Commerce, agreed on the terms and conditions of the Settlement, which was subsequently approved by the U.S. Eastern District Court of California (Court) on October 23, 2006.

The Settlement establishes two primary goals:

- **Restoration Goal** – To restore and maintain fish populations in "good condition" in the mainstem 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 Flows and Restoration Flows provided for in the Settlement.

The SJRRP will implement the Settlement. The "Implementing Agencies" responsible for management of the SJRRP include the U.S. Department of the Interior, through Reclamation and the U.S. Fish and Wildlife Service (USFWS), U.S. Department of Commerce through the National Marine Fisheries Service (NMFS), and the State of California (State) Natural Resources Agency through DWR, the California Department of Fish and Game (DFG), and the California Environmental Protection Agency (Cal/EPA). The Settlement also stipulates the appointment of a Restoration Administrator (RA), in consultation with a Technical Advisory Committee (TAC), to make recommendations to the Secretary of the U.S. Department of the Interior (Secretary) to help in meeting the Restoration Goal.

The Settlement identifies the releases of both Interim Flows and Restoration Flows. The Settlement stipulates the release of Interim Flows beginning October 1, 2009, and continuing until full Restoration Flows begin. The purpose of the Interim Flows is to collect relevant data on flows, temperatures, fish needs, seepage losses, recirculation, recapture and reuse. Full Restoration Flows are described in Exhibit B of the Settlement.

1.2 Purpose and Need Statement

NEPA regulations require a statement of "the underlying purpose and need to which the agency is responding in proposing the alternatives, including the Proposed Action" (40 Code of Federal Regulations (CFR) 1502.13). CEQA Guidelines require a clearly written statement of objectives, including the underlying purpose of the project (Guidelines Section 15124(b)).

The purpose of the Proposed Action is to implement the provisions of the Settlement pertaining to WY 2010. The need for action is to support collection of relevant data to guide future releases of Interim Flows and Restoration Flows under the SJRRP.

The two key objectives of the Proposed Action are as follows:

- Release of WY 2010 Interim Flows according to the Settlement and the Act, as limited by downstream channel capacities, and consistent with Federal, State, and local laws, and future agreements with downstream agencies and entities.

- Collect data to better evaluate flows, temperatures, fish needs, biological effects, and seepage losses, and water recirculation, recapture, and reuse opportunities for Interim Flows and future Restoration Flows.

1.3 Purpose of this Document and Regulatory Guidance

The purpose of this document is to identify and disclose potential impacts of implementing the Proposed Action, in compliance with NEPA and CEQA. Regulatory guidance on NEPA and CEQA, as it pertains to this document, is summarized below.

1.3.1 National Environmental Policy Act

Section 10006 of the Act (Public Law 111-11) states that "In undertaking the measures authorized by this part, the Secretary and the Secretary of Commerce shall comply with all applicable Federal and State laws, rules and regulations including NEPA and the ESA, as necessary."

For the Proposed Action, Reclamation is the lead agency under NEPA (40 CFR 1501.5) because Reclamation has the principal Federal fiscal and management role in implementing the SJRRP. Additionally, Reclamation is responsible for operation of Friant Dam and directly controls all releases from the dam.

Reclamation will ensure compliance with NEPA and the regulations published by the Council on Environmental Quality (CEQ) (40 CFR 1500–1508), before initiating the Proposed Action. Also, this document is prepared consistent with Department of the Interior requirements specified in 43 CFR, Part 46 (U.S Department of the Interior Implementation of NEPA, Final Rule). This document serves as an EA, prepared in accordance with NEPA and associated Federal Guidelines. This EA was prepared with input from various disciplines and interested parties, and includes sufficient evidence and

analysis for determining whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI). As required under NEPA, this EA provides information describing the Proposed Action, alternatives, and related environmental consequences. Before making a final decision on the Proposed Action or another alternative, the EA will be available for comment to public agencies and citizens during a 30-day public review period. After public review of the EA, Reclamation intends to make a final decision regarding approval of the FONSI. Before approval of the FONSI, Reclamation will conclude consultation under Section 7 of the Federal Endangered Species Act of 1973, as amended (ESA), to ensure that the Proposed Action will not jeopardize listed species or destroy or adversely modify designated critical habitat.

1.3.2 California Environmental Quality Act

This document is a joint IS prepared in accordance with CEQA, Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, Title 14 of the California Code of Regulations (CCR) Section 15000 et seq. The purpose of this IS is to (1) determine whether project implementation would result in potentially significant or significant effects to the environment, and (2) incorporate mitigation measures into the project design, as necessary, to eliminate the project's potentially significant, or significant, project effects, or reduce them to a less-than-significant level. An IS presents environmental analysis and substantial evidence supporting its conclusions regarding the significance of environmental impacts. Substantial evidence may include expert opinion based on facts, technical studies, or reasonable assumptions based on facts. An IS is not intended nor required to include the level of detail in an Environmental Impact Report (EIR).

CEQA requires that all State and local government agencies consider the environmental consequences of projects they propose to carry out, or over which they have discretionary authority, before implementing or approving those projects. As specified in State CEQA Guidelines Section 15367, the public agency with the principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance. DWR is therefore the CEQA lead agency for the Proposed Action because of its overall State role for implementing the SJRPP, and because several discretionary activities by the Lower San Joaquin River Levee District are necessary to implement WY 2010 Interim Flows. These discretionary activities include operation of structures within the Restoration Area such as the Chowchilla Bypass Bifurcation Structure, Eastside Bypass Bifurcation Structure, Mariposa Bypass Bifurcation Structure, and numerous flap gates.

As specified in State CEQA Guidelines Section 15064(a), if substantial evidence exists (such as the results of an IS) that a project, either individually or cumulatively, may have a significant effect on the environment, the lead agency must prepare an EIR. The lead agency may instead prepare a Negative Declaration if it is determined there is no substantial evidence that the project may cause a significant impact on the environment. The lead agency may prepare an Mitigated Negative Declaration (MND) if, in the course of the IS analysis, it is recognized that the project may have a significant impact on the environment but that implementing specific mitigation measures would reduce any such impacts to a less-than-significant level (State CEQA Guidelines Section 15064(f)).

DWR has prepared this IS to evaluate the potential environmental effects of the Proposed Action and has incorporated mitigation measures to reduce or eliminate any potentially significant project-related impacts. Therefore, an MND has been separately prepared for this project.

1.3.3 Relationship to SJRRP PEIS/R and State Water Rights

Reclamation and DWR are developing this SJRRP Interim Flows EA/IS, concurrent with preparation of the PEIS/R, in order to meet the Settlement's schedule for initiating Interim Flow releases on October 1, 2009. The PEIS/R is being prepared to describe potential environmental impacts the implementing the SJRRP, including release of Interim Flows (in WY 2010 and beyond) and full Restoration Flows. The Draft PEIS/R is scheduled to be released in summer 2009, and the Final PEIS/R is scheduled to be released in winter 2009/2010. The Record of Decision (ROD) by Reclamation and the Notice of Determination (NOD) by DWR are anticipated in early 2010. Upon issuance, the ROD and NOD for the PEIS/R would provide NEPA/CEQA compliance for all Interim Flows (including the WY 2010 Interim Flows, if relevant). Reclamation will petition the State Water Resources Control Board (SWRCB) for a permanent water transfer to facilitate the release and recapture of Interim Flows as well as full Restoration Flows (as stipulated in Paragraph 13 of the Settlement).

For the WY 2010 Interim Flows, Reclamation will submit a petition for temporary transfer of water (less than 1 year) pursuant to California Water Code Section 1725 et seq. to address the release and diversion of WY 2010 Interim Flows. In acting on a water right petition, the SWRCB must consider potential impacts to other legal users of the water, and whether there are any unreasonable effects from the transfer on fish, wildlife, or other instream beneficial uses. To facilitate evaluation by SWRCB, Reclamation and DWR are providing this EA/IS in advance of the PEIS/R to allow sufficient time for SWRCB to review the petition for temporary transfer of water/water rights for WY 2010 Interim Flows. The time frame for release of an EA/IS, concurrent with the 1-year petition to SWRCB for temporary transfer of water, necessarily constrains the scope of WY 2010 Interim Flows to the use of currently available information.

The Proposed Action results in the collection of data to better evaluate flows, temperature, fish needs, biological effects, and seepage losses, and water recirculation, recapture, and reuse opportunities for Interim Flows and future Restoration Flows. These data are useful independent of the SJRRP, particularly with respect to understanding the flood management system and seepage. While the Proposed Action is certainly one of the first steps in implementing the SJRRP, the Proposed Action can be implemented successfully in meeting its purpose and objectives without any subsequent SJRRP activities. The PEIS/R will evaluate all SJRRP activities, including the Water Year 2010 Interim Flows, to ensure that all direct, indirect, and cumulative effects are evaluated at a program level.

1.4 Implementing Agency Responsibility

The Implementing Agencies are responsible for implementing the WY 2010 Interim Flows, and include Reclamation, USFWS, NMFS, DWR, DFG, and CalEPA. Reclamation and DWR have initiated NEPA and CEQA environmental compliance, respectively, for implementing the WY 2010 Interim Flows.

1.4.1 Federal Role in Implementing Water Year 2010 Interim Flows

The Settlement identifies the need for the involvement of the Secretary through Reclamation as the lead Federal agency responsible for implementation, and through USFWS as the lead Federal agency responsible for reintroducing spring-run and fall-run Chinook salmon. The Settlement also identifies the Secretary of the U.S. Department of Commerce, through NMFS, as a necessary participant for permitting the reintroduction of spring-run Chinook salmon.

Reclamation is responsible for implementing WY 2010 Interim Flows through the reoperation of Friant Dam and the recirculation, transfer and/or exchange of recaptured flows to Friant Division long-term contractors. Reclamation will consult with USFWS and NMFS to ensure compliance with Section 7 of the Federal ESA. Implementation of the WY 2010 Interim Flows by Federal agencies is authorized by the Act. The Act also appropriates funds necessary for implementing WY 2010 Interim Flows.

1.4.2 State Role in Implementing Water Year 2010 Interim Flows

The Settlement identifies the need for the involvement of the State of California Natural Resources Agency through DWR and DFG, and CalEPA. Implementing the WY 2010 Interim Flows also requires the involvement of the State of California Natural Resources Agency through DWR and DFG. Consistent with a Memorandum of Understanding with the Settling Parties and the State, the California Natural Resources Agency will play a major role in funding and implementing activities called for in the Settlement and in the Act. DWR, along with several other State organizations, will implement actions needed to route WY 2010 Interim Flows through the Restoration Area. Because of DWR's greater role in the SJRRP, DWR will serve as the lead agency under CEQA. Actions by State organizations to implement WY 2010 Interim Flows would include the following:

- **DWR** – Install seals on the Chowchilla Bypass Bifurcation Structure to reduce leakage around closed radial gates
- **DFG** – Assist with monitoring and recovery of steelhead in the San Joaquin River between Mendota Dam and the confluence with the Merced River
- **Central California Irrigation District** – Release Interim Flows from Mendota Dam to the San Joaquin River
- **Lower San Joaquin Levee District** – Operate, inspect, and maintain flood control facilities including levees, channels, flap gates, and bifurcation structures. These activities may include patrolling of levees to assess conditions, maintain

channels, close flap gates prior to release of WY 2010 Interim Flows, and operate the Chowchilla, Eastside, and Mariposa bypass bifurcation structures.

- **Central Valley Flood Protection Board –** Potentially issue an encroachment permit to use the Eastside and Mariposa bypasses for WY 2010 Interim Flows

- **SWRCB** – Issuance of a temporary water transfer for the release and diversion of Interim Flows

1.5 Study Area

The study area for the EA/IS includes areas that may be affected directly, indirectly, or cumulatively by the Proposed Action. The study area, shown in Figure 1-1, has been broadly defined to evaluate potential effects within the San Joaquin River upstream from Friant Dam, the Restoration Area, the San Joaquin River from the confluence with the Merced River to the Delta, the Delta, and CVP/State Water Project (SWP) water service areas, including the Friant Division. The Restoration Area, which is the San Joaquin River from Friant Dam to the confluence of the Merced River, is shown in Figure 1-2. The San Joaquin River and flood bypasses within the Restoration Area are described as a series of physically and operationally distinct reaches, as shown in Figure 1-2 and defined in Table 1-1. Table 1-1 also identifies which river reaches and bypasses are included in the study area for this EA/IS.

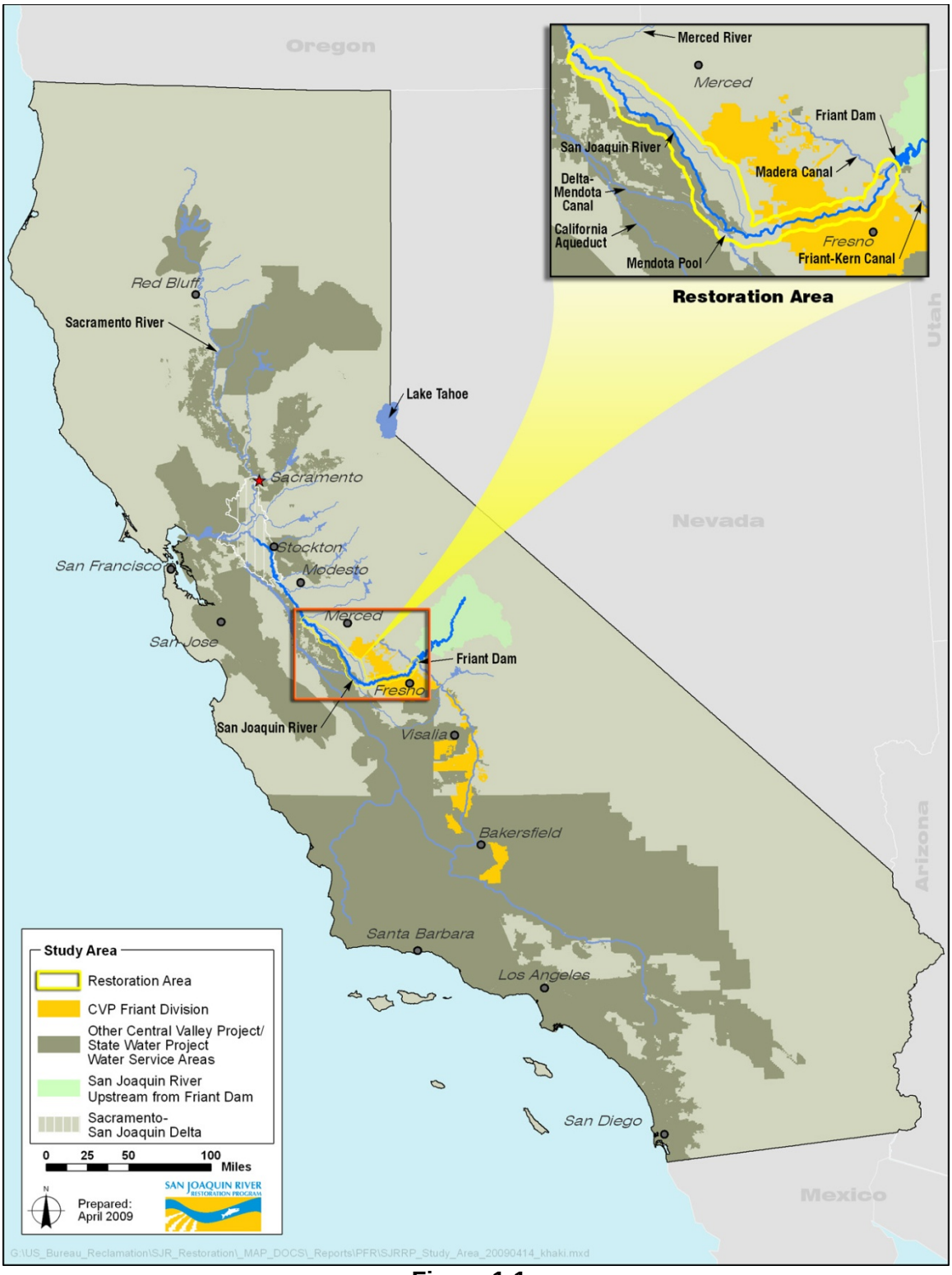

Figure 1-1.
Water Year 2010 Interim Flows Study Area

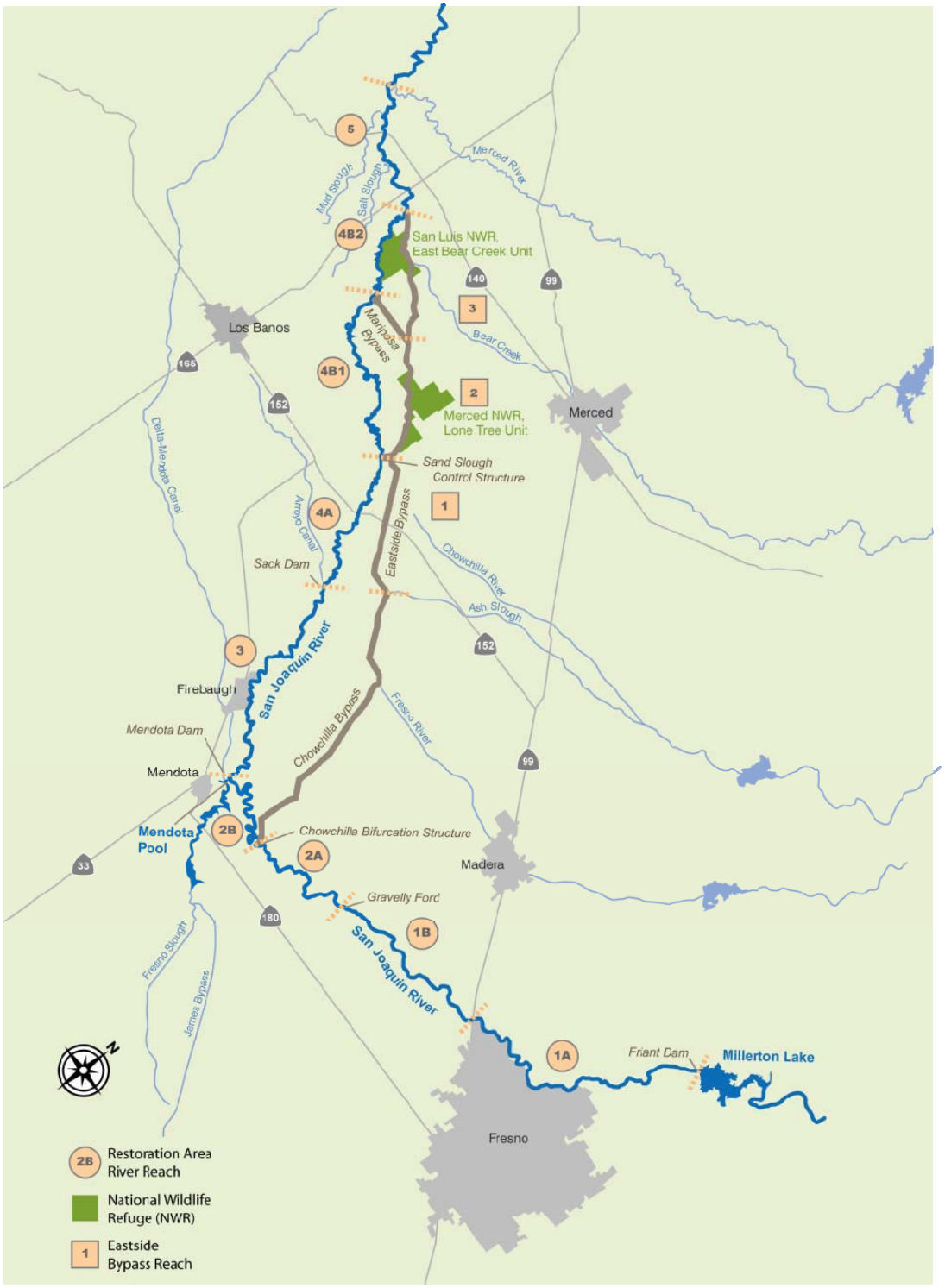

Figure 1-2.
San Joaquin River Reaches and Flood Bypass System in the Restoration Area

Table 1-1.
Water Year 2010 Interim Flows Study Area Within San Joaquin River Reaches and Flood Bypasses in Restoration Area

San Joaquin River Reaches and Flood Bypasses in Restoration Area				Restoration Area Reaches Included in Water Year 2010 Interim Flows Study Area
River or Bypass	**Reach**	**Head of Reach or Bypass**	**Downstream End of Reach or Bypass**	
San Joaquin River	**1A**	Friant Dam	State Route 99	✓
	1B	State Route 99	Gravelly Ford	✓
	2A	Gravelly Ford	Chowchilla Bypass Bifurcation Structure	✓
	2B	Chowchilla Bypass Bifurcation Structure	Mendota Dam	✓
	3	Mendota Dam	Sack Dam	✓
	4A	Sack Dam	Sand Slough Control Structure	✓
	4B1	Sand Slough Control Structure	Confluence with Mariposa Bypass	
	4B2	Confluence with Mariposa Bypass	Confluence with Bear Creek and Eastside Bypass	✓
	5	Confluence with Bear Creek and Eastside Bypass	Confluence with Merced River	✓
Chowchilla Bypass		Chowchilla Bypass Bifurcation Structure	Confluence with Ash Slough and Eastside Bypass	
Eastside Bypass		Confluence with Ash Slough and Chowchilla Bypass	Confluence with Bear Creek and San Joaquin River	✓
Sand Slough Bypass		Sand Slough Control Structure	Eastside Bypass	✓
Mariposa Bypass		Mariposa Bypass Bifurcation Structure	Confluence with San Joaquin River	✓

1.6 Document Organization

This document is divided into the following sections:

- **Section 1, Introduction and Statement of Purpose and Need,** introduces the Proposed Action, and provides background information; describes the purpose of and need for the Proposed Action; discusses the purpose of this document and regulatory guidance; describes Implementing Agency responsibilities, provides study area information; and describes document organization.

- **Section 2, Description of Alternatives,** describes the No-Action Alternative and Proposed Action.

- **Section 3, Affected Environment,** describes the environment and physical conditions in the areas to be affected by the alternatives under consideration.

- **Section 4, Environmental Consequences,** describes the thresholds of significance and the direct, indirect, and cumulative effects of implementing the No-Action Alternative or Proposed Action.

- **Section 5, Consultation and Coordination,** lists agencies, organizations, and persons consulted, and describes the public involvement process for this document.

- **Section 6, Compliance with Applicable Laws, Executive Orders, and Plans,** describes Federal, State, regional, and local laws, executive orders, and plans that must be complied with to implement the project.

- **Section 7, List of Preparers,** presents agency staff and consultants directly responsible for preparing or reviewing this document.

- **Section 8, References,** lists references cited in this EA/IS.

Appendices to this EA/IS provide pertinent supporting information and data used while preparing this EA/IS, and include the following:

- **Appendix A,** Stipulation of Settlement in *NRDC, et al., v. Kirk Rodgers, et al.*

- **Appendix B,** San Joaquin River Restoration Settlement Act

- **Appendix C,** Friant Dam Releases for Restoration Flows

- **Appendix D,** Seepage Monitoring and Management Plan for Water Year 2010 Interim Flows (Seepage Monitoring and Management Plan)

- **Appendix E,** Flow Monitoring and Management Plan for Water Year 2010 Interim Flows (Flow Monitoring and Management Plan)

- **Appendix F,** Invasive Species Monitoring and Management Plan for Water Year 2010 Interim Flows (Invasive Species Monitoring and Management Plan)

- **Appendix G**, Modeling

- **Appendix H,** Biological Resources

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2.0 Description of Alternatives

The Proposed Action and the combined NEPA/CEQA No-Action/No-Project Alternative (No-Action Alternative) are described in this section. The No-Action Alternative represents existing conditions in the San Joaquin River and existing operations at Friant Dam. The Proposed Action is the implementation of the WY 2010 Interim Flows, including the release and potential downstream recapture of Interim Flows, the activities necessary to convey the flows in the San Joaquin River system to the Delta, and the monitoring activities to be conducted during the WY 2010 Interim Flow releases.

2.1 No-Action Alternative

The No-Action Alternative includes the continued operation of Friant Dam under existing conditions, and would not include the release of WY 2010 Interim Flows. Reclamation would continue to release a base flow from Friant Dam to meet the existing holding contract obligations to maintain a 5 cfs flow at Gravelly Ford. Releases from Friant Dam typically range from 180 to 250 cfs in summer and 40 to 100 cfs in winter. Figure 2-1 shows the average simulated end-of-month storage in Millerton Lake under the No-Action Alternative in Wet and Normal-Dry years. Average simulated daily San Joaquin River flows in Wet and Normal-Dry years under the No-Action Alternative, including flood flows, at selected locations in the San Joaquin River are shown in Figures 2-2 through 2-6.

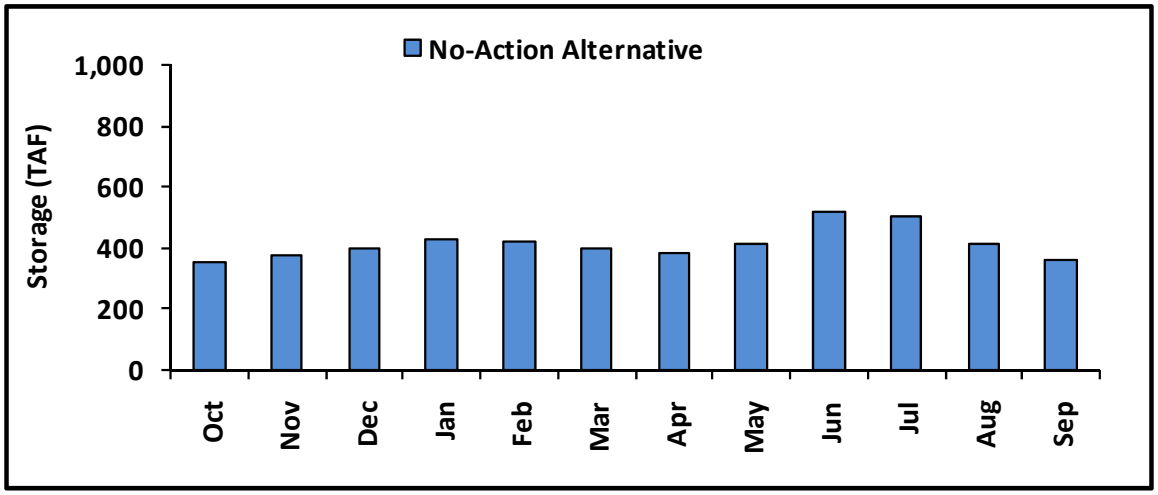


Figure 2-1.
Average Simulated End-of-Month Millerton Lake Storage in Wet Years Under the No-Action Alternative

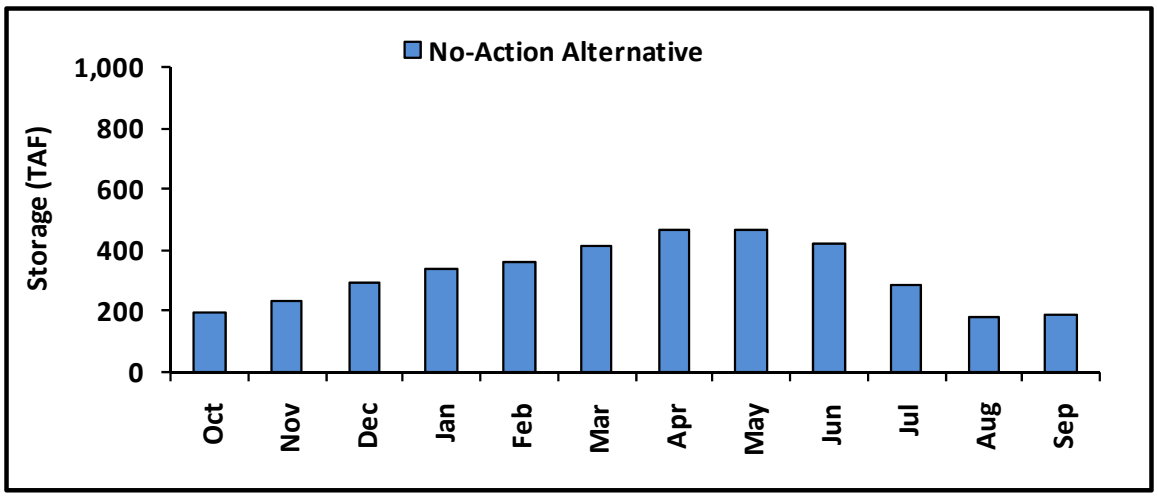


Figure 2-2.
Average Simulated End-of-Month Millerton Lake Storage in Normal-Dry Years Under the No-Action Alternative

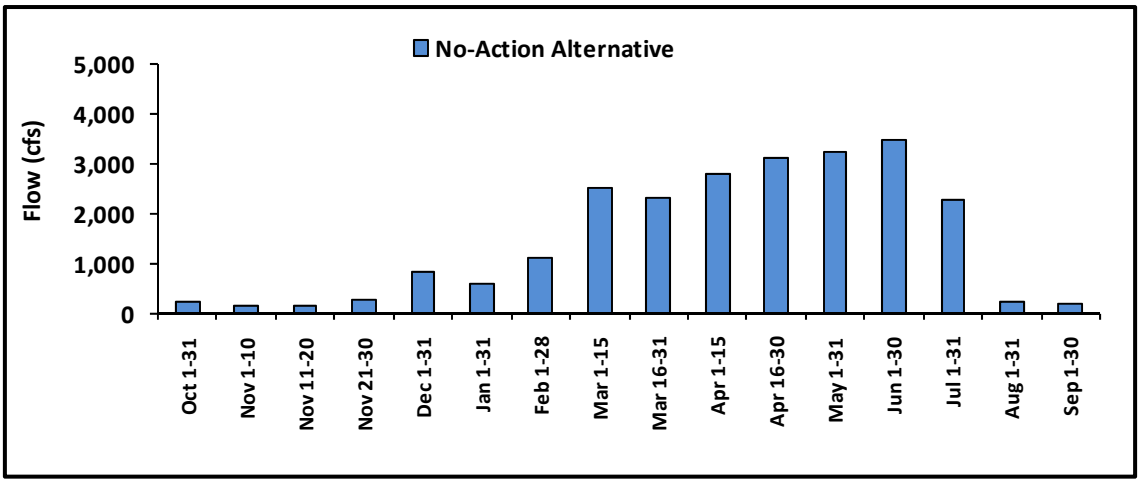


Figure 2-3.
Average Simulated Daily Flow at the Head of Reach 1 in Wet Years Under the No-Action Alternative

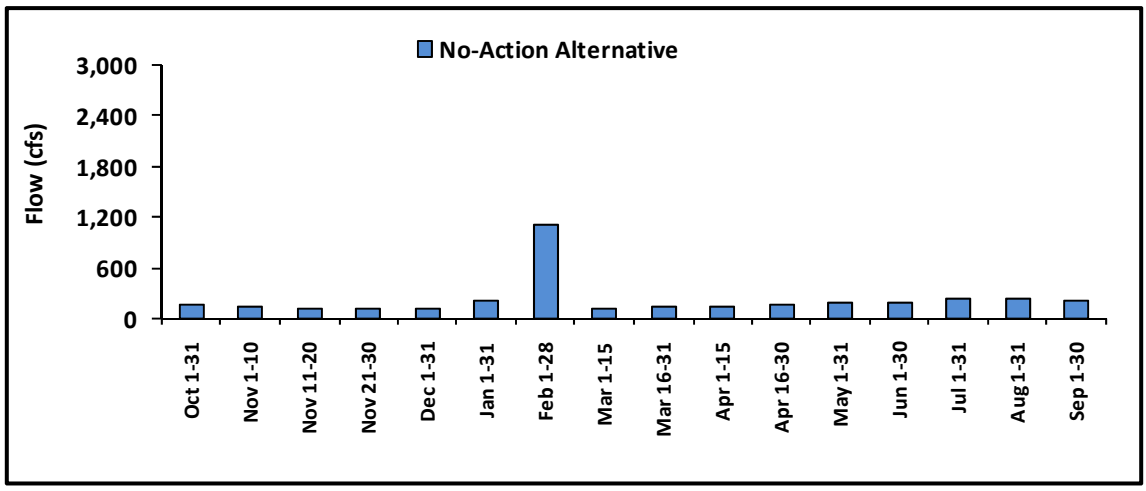


Figure 2-4.
Average Simulated Daily Flow at the Head of Reach 1 in Normal-Dry Years Under the No-Action Alternative

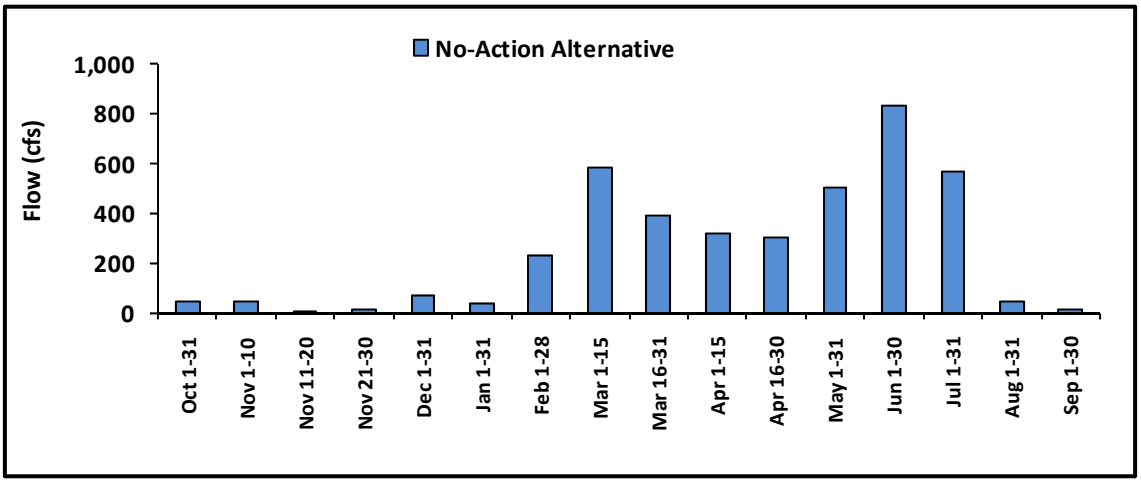


Figure 2-5.
Average Simulated Daily Flow at the Head of Reach 2B in Wet Years Under the No-Action Alternative

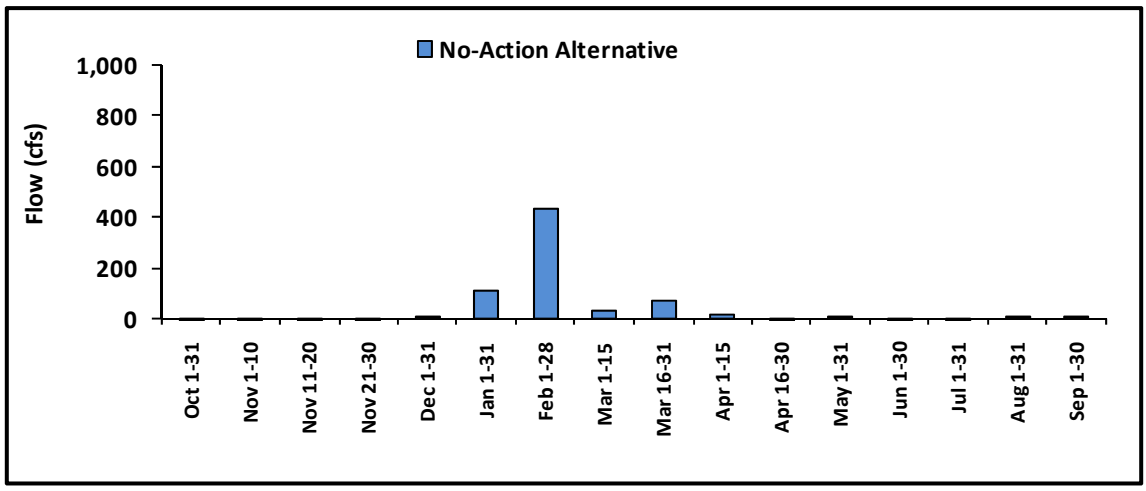


Figure 2-6.
Average Simulated Daily Flow at the Head of Reach 2B in Normal-Dry Years Under the No-Action Alternative

2.2 Proposed Action

The Proposed Action is the release of WY 2010 Interim Flows according to the Settlement and the Act, as limited by downstream channel capacities and potential material adverse impacts from groundwater seepage, and consistent with Federal, State, and local laws, and future agreements with downstream agencies, entities, and landowners. Interim Flows would be released to the San Joaquin River from Friant Dam during WY 2010, from October 1, 2009, through November 20, 2009, and from February 1, 2010, through September 30, 2010, in accordance with the average flow release schedule presented in Exhibit B of the Settlement. Target flows or estimated maximum flows within the Restoration Area under the Proposed Action are shown in Table 2-1 by reach. Average daily releases from Friant Dam, along with resulting flows in each reach, may be higher than the estimated maximums shown in the table depending on a variety of factors, such as infiltration losses in lower reaches and diversions within Reach 1, as shown in Figures 2-7 through 2-12. The change in estimated maximum flows under the Proposed Action from existing conditions is shown in Table 2-2. Estimated maximum flows in Tables 2-1 and 2-2 represent nonflood conditions under a Wet water year-type, and would vary depending on the water year-type.

Figure 2-7 shows the average simulated end-of-month storage in Millerton Lake under the No-Action Alternative and Proposed Action in Wet and Normal-Dry years. The average simulated daily San Joaquin River flows in Wet and Normal-Dry years under the No-Action Alternative, including flood flows, and the estimated maximum flows under the Proposed Action, at selected locations in the San Joaquin River are shown in Figures 2-7 through 2-12.

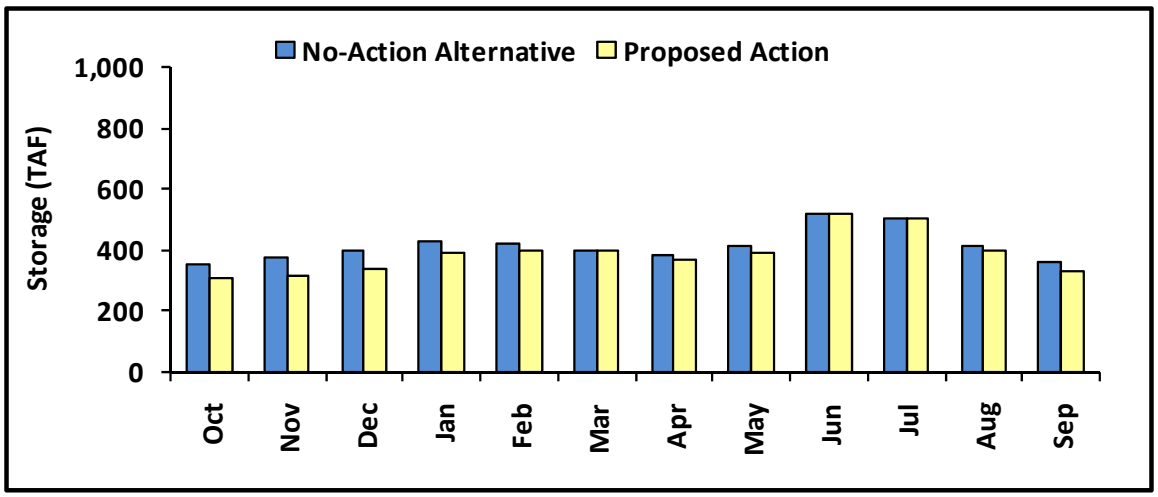


Figure 2-7.
Average Simulated End-of-Month Millerton Lake Storage in Wet Years Under the Proposed Action

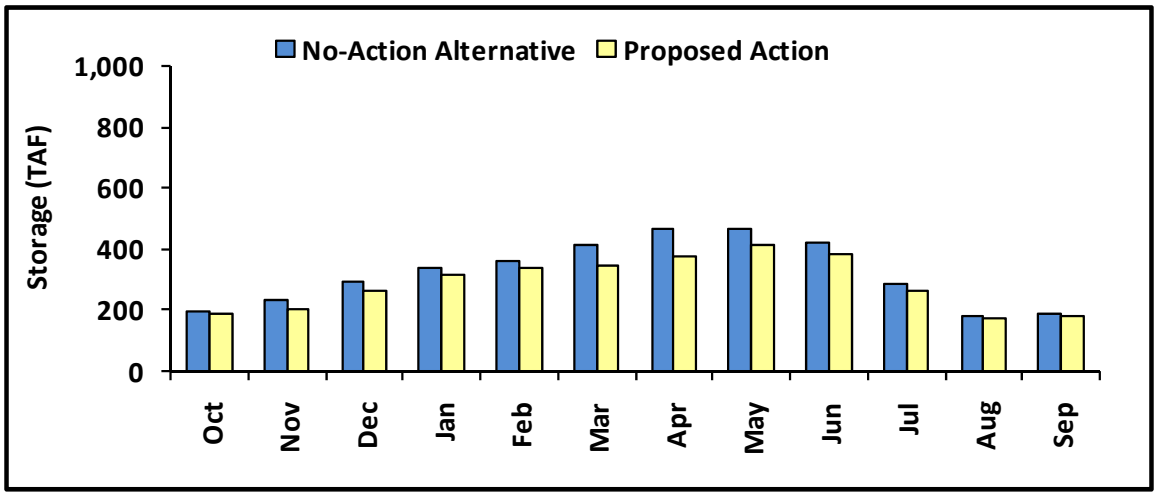


Figure 2-8.
Average Simulated End-of-Month Millerton Lake Storage in Normal-Dry Years Under the Proposed Action

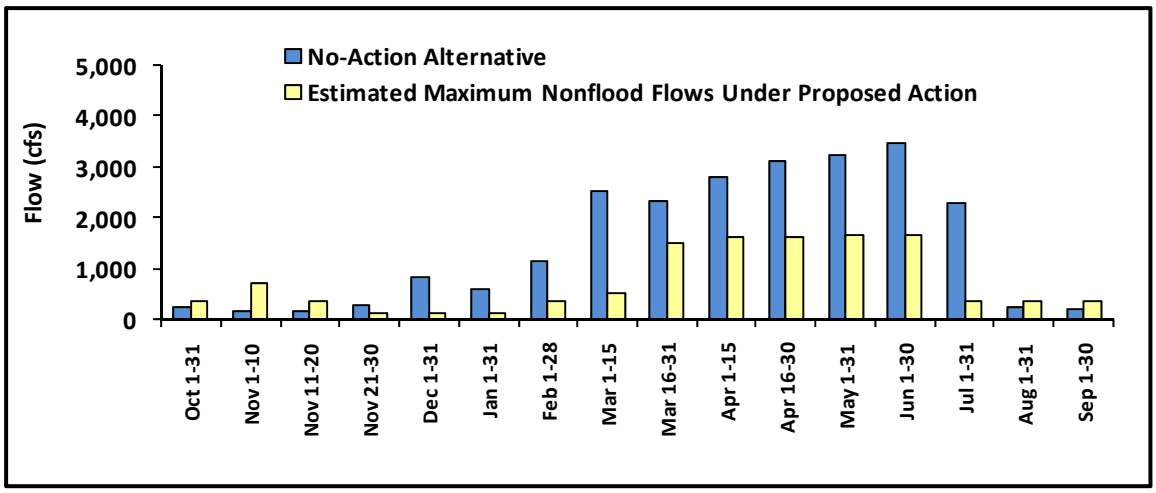


Figure 2-9.
Average Simulated Daily Flow at the Head of Reach 1 in Wet Years Under the Proposed Action

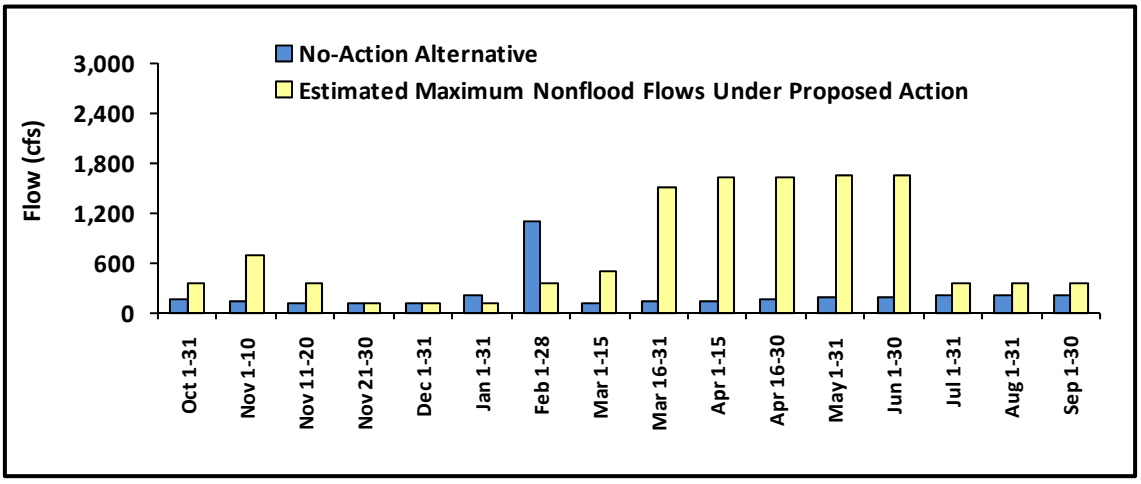


Figure 2-10.
Average Simulated Daily Flow at the Head of Reach 1 in Normal-Dry Years Under the Proposed Action

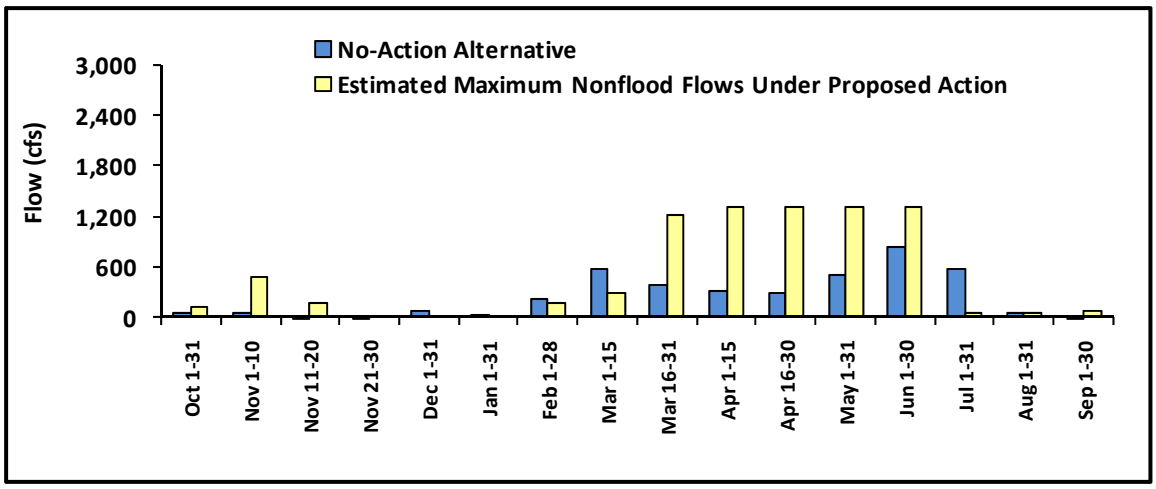


Figure 2-11.
Average Simulated Daily Flow at the Head of Reach 2B in Wet Years Under the Proposed Action

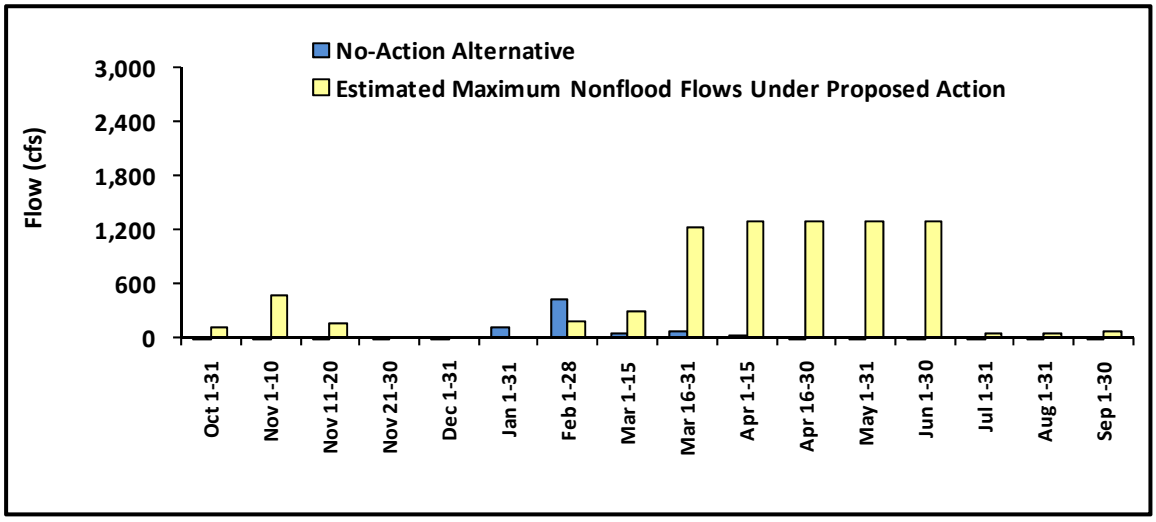


Figure 2-12.
Average Simulated Daily Flow at the Head of Reach 2B in Normal-Dry Years Under the Proposed Action

The Proposed Action includes, to the estimated maximum extent possible, recapturing WY 2010 Interim Flows at locations along the San Joaquin River and/or in the Delta, and transferring this water back to Friant Division long-term contractors. WY 2010 Interim Flows would be recaptured and recirculated to the maximum extent possible, consistent with and limited by existing operating criteria, prevailing and relevant laws, regulations, biological opinions (BO), and court orders in place at the time the water is recaptured. The estimated maximum water released for WY 2010 Interim Flows that could be available for transfer under the Proposed Action is shown in Table 2-3. The estimated maximum downstream extent of WY 2010 Interim Flows that could be recaptured would be at the Jones and Banks pumping plants.

The Proposed Action includes several potential diversion locations for recapturing Interim Flow releases, including existing CVP and SWP facilities in the Delta, the Mendota Pool at the downstream end of Reach 2B, the Arroyo Canal at the downstream end of Reach 3, the Lone Tree Unit of the Merced National Wildlife Refuge (NWR) (Lone Tree Unit) in Eastside Bypass Reach 2, and the East Bear Creek Unit of the San Luis NWR (East Bear Creek Unit) in Eastside Bypass Reach 3. WY 2010 Interim Flows recaptured along the San Joaquin River may provide deliveries in lieu of Delta-Mendota Canal (DMC) supplies. Recirculation would be subject to available capacity within CVP/SWP storage and conveyance facilities, as shown in Figure 2-1, including the Jones and Banks pumping plants, the California Aqueduct, the DMC, San Luis Reservoir and related pumping facilities, and other facilities of CVP/SWP contractors. The Delta export facilities may react to the increased inflow, but will still operate consistent with existing operating criteria, consistent with prevailing and relevant laws, regulations, biological opinions (BO), and court orders in place at the time the water is recaptured. In such cases, Delta exports would not change in the Proposed Action compared to the No-Action Alternative. Up to a like amount of exported water would be available for recirculation to the Friant Division using south-of-Delta facilities. No additional agreements would be required to recapture flows in the Restoration Area. Recirculation of recaptured water to the Friant Division could require mutual agreements between Reclamation, DWR, Friant Division long-term contractors, and other south-of-Delta CVP/SWP contractors.

Table 2-1.
Target Flows Under the Proposed Action

Beginning Date	Ending Date	Target Flows Consisting of Interim Flows and Water Right Flows at Locations in the Restoration Area[1] (cubic feet per second)									
		Head of Reach 1[4]	Head of Reach 2A[5]	Head of Reach 2B[6]	Head of Reach 3[7]	Head of Reach 4A[8]	In Reach 4B1	In Reach 4B2	In Bypass System[8,9]	Head of Reach 5	Merced River Confluence[10]
10/1/2009	10/31/2009	350	195	115	715	115	0	115	115	115	415
11/1/2009	11/6/2009	700	575	475	1,075	475	0	475	475	475	775
11/7/2009	11/10/2009	700	575	475	1,075	475	0	475	475	475	775
11/11/2009	11/20/2009	350	235	155	755	155	0	155	155	155	555
11/21/2009[3]	1/31/2010[2]	120	5	0	0	0	0	0	0	0	0
2/1/2010	2/28/2010	350	255	175	775	175	0	175	175	175	675
3/1/2010	3/15/2010	500	375	285	885	285	0	285	285	285	785
3/16/2010	3/31/2010	1,500	1,375	1,225	1,300	1,225	0	1,225	1,225	1,225	1,700
4/1/2010	4/15/2010	1,620	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
4/16/2010	4/30/2010	1,620	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
5/1/2010	6/30/2010	1,660	1,475	1,300	1,300	1,300	0	1,300	1,300	1,300	1,700
7/1/2010	8/31/2010	350	125	45	645	45	0	45	45	45	320
9/1/2010	9/30/2010	350	145	65	665	65	0	65	65	65	340
Estimated Maximum Total Volume (thousand acre-feet)		485	387	321	544	321	0	321	321	321	533

Notes:

[1] Regulated nonflood releases from Friant Dam and deliveries by the Delta-Mendota Canal, exclusive of agricultural return flows and natural drainage.

[2] Assumes Wet water year-type. Flows may be lower under other water year-types.

[3] No Water Year 2010 Interim Flows during this period.

[4] Assumes up to 230 cubic feet per second diverted by instream water right holders (e.g., holding contracts), consistent with Exhibit B of the Settlement.

[5] Assumes up to 200 cubic feet per second lost through infiltration, consistent with Exhibit B of the Settlement.

[6] Assumes up to approximately 2,600 cubic feet per second maximum diversion capacity to water right holders in the Mendota Pool. Estimated maximum Water Year 2010 Interim Flows at the head of Reach 2B account for seepage losses experienced in Reach 2A, consistent with Exhibit B of the Settlement.

[7] Assumes up to 600 cubic feet per second released to Reach 3 from the Mendota Pool for diversions at Sack Dam into the Arroyo Canal.

[8] Assumes up to 25 percent of flow lost through infiltration downstream from Sack Dam, and up to 80 cubic feet per second diverted at wildlife refuges.

[9] Includes Eastside and Mariposa bypasses.

[10] Assumes accretions from Mud and Salt sloughs in Reach 5, consistent with Exhibit B of the Settlement.

Table 2-2.
Change in Target Flows Under the Proposed Action from No-Action Alternative/Existing Conditions

Beginning Date	Ending Date	Change in Target Flows Under the Proposed Action at Locations in the Restoration Area[1] (cubic feet per second)									
		Head of Reach 1[4]	Head of Reach 2A[5]	Head of Reach 2B[6]	Head of Reach 3[7]	Head of Reach 4A[8]	In Reach 4B1	In Reach 4B2	In Bypass System[8,9]	Head of Reach 5	Merced River Confluence[10]
10/1/2009	10/31/2009	190	190	115	115	115	0	115	115	115	115
11/1/2009	11/6/2009	570	570	475	475	475	0	475	475	475	475
11/7/2009	11/10/2009	570	570	475	475	475	0	475	475	475	475
11/11/2009	11/20/2009	230	230	155	155	155	0	155	155	155	155
11/21/2009[3]	1/31/2010[2]	0	0	600	0	0	0	0	0	0	400
2/1/2010	2/28/2010	250	250	175	175	175	0	175	175	175	175
3/1/2010	3/15/2010	370	370	285	285	285	0	285	285	285	285
3/16/2010	3/31/2010	1,370	1,370	1,225	700	1,225	0	1,225	1,225	1,225	1,225
4/1/2010	4/15/2010	1,470	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
4/16/2010	4/30/2010	1,470	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
5/1/2010	6/30/2010	1,470	1,470	1,300	700	1,300	0	1,300	1,300	1,300	1,300
7/1/2010	8/31/2010	120	120	45	45	45	0	45	45	45	45
9/1/2010	9/30/2010	140	140	65	65	65	0	65	65	65	65
Estimated Maximum Total Volume (thousand acre-feet)		384	384	321	196	321	0	321	321	321	321

Notes:
[1] Regulated nonflood releases from Friant Dam and deliveries by the Delta-Mendota Canal, exclusive of agricultural return flows and natural drainage.
[2] Assumes Wet water year-type. Flows may be lower under other water year-types.
[3] No Water Year 2010 Interim Flows during this period.
[4] Assumes up to 230 cubic feet per second diverted by instream water right holders (e.g., holding contracts), consistent with Exhibit B of the Settlement.
[5] Assumes up to 200 cubic feet per second lost through infiltration, consistent with Exhibit B of the Settlement.
[6] Assumes up to 2,621 cubic feet per second maximum diversion capacity to water right holders in the Mendota Pool.
[7] Assumes up to 600 cubic feet per second released to Reach 3 from the Mendota Pool for diversions at Sack Dam into the Arroyo Canal.
[8] Assumes up to 25 percent of flow lost through infiltration downstream from Sack Dam, and up to 80 cubic feet per second diverted at wildlife refuges.
[9] Includes Eastside and Mariposa bypasses.
[10] Assumes accretions from Mud and Salt sloughs in Reach 5, consistent with Exhibit B of the Settlement.

Table 2-3.
Estimated Maximum Water Available for Transfer Under the Proposed Action

Begin Date	End Date	Releases from Friant Dam (cfs)	Reach 1 Holding Contract Releases (cfs)	Friant Dam Releases Minus Reach 1 Holding Contract Releases (cfs)
10/1/2009	10/31/2009	350	160	190
11/1/2009	11/6/2009	700	130	570
11/7/2009	11/10/2009	700	130	570
11/11/2009	11/20/2009	350	120	230
11/21/2009	1/31/2009	*No WY 2010 Interim Flows released during this period*		
2/1/2010	2/28/2010	350	100	250
3/1/2010	3/15/2010	500	130	370
3/16/2010	3/31/2010	1500	130	1,370
4/1/2010	4/15/2010	1,620	150	1,470
4/16/2010	4/30/2010	1,620	150	1,470
5/1/2010	6/30/2010	1,660	190	1,470
7/1/2010	8/31/2010	350	230	120
9/1/2010	9/30/2010	350	210	140
	Total flows released (TAF):	**485**	**Total available for temporary transfer (TAF):**	**384**

Key:
cfs = cubic feet per second
TAF = thousand acre-feet

Implementing the Proposed Action could increase flows entering the Delta from the San Joaquin River. The Delta export facilities may react to the increased inflow, but will still operate consistent with existing operating criteria, consistent with prevailing and relevant laws, regulations, biological opinions (BO), and court orders in place at the time the water is recaptured. Any increase in Delta exports directly resulting from the WY 2010 Interim Flows would be evaluated for recirculation to the Friant Division. Water recirculated to the Friant Division in this manner could require subsequent exchange agreements between Reclamation, DWR, Friant Division long-term contractors, and other south-of-Delta CVP/SWP contractors. Recirculation would be subject to available capacity within CVP/SWP storage and conveyance facilities, as shown in Figure 2-13, including the Jones and Banks pumping plants, the California Aqueduct, the DMC, San Luis Reservoir and related pumping facilities, and other facilities of CVP/SWP contractors.

Recaptured water available to Friant Division long-term contractors would range from zero to 384 TAF, as shown in Table 2-3. Reclamation would identify actual delivery reductions to Friant Division long-term contractors associated with the release of WY 2010 Interim Flows.

Additional implementation considerations could further constrain the release of WY 2010 Interim Flows, and include water supply demand; Mendota Dam operations; Sack Dam operations; agreements with landowners and other Federal, State, and local agencies; special-status species; and potential for seepage. Each of these topics is discussed in further detail in Section 2.2.3.

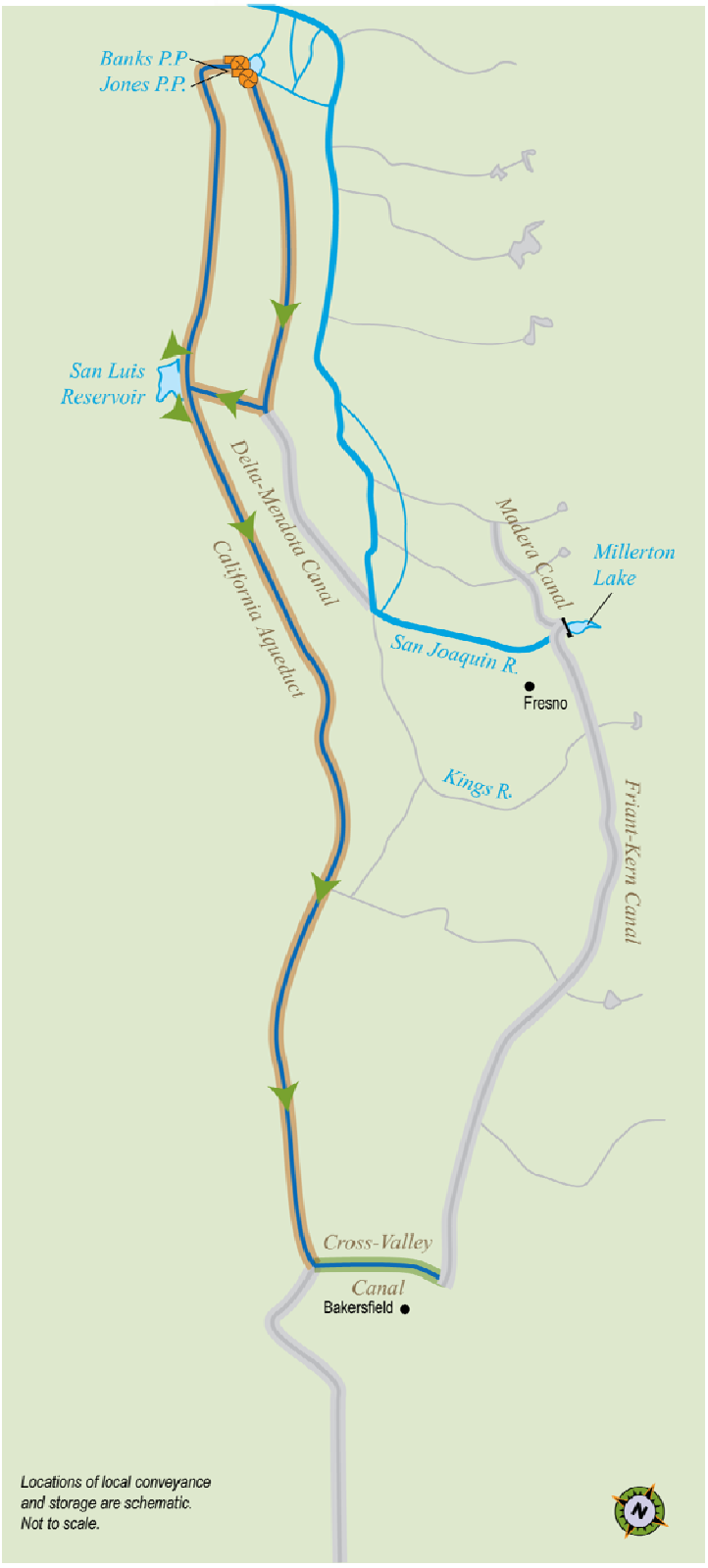


Figure 2-13.
Major Central Valley Project/State Water Project Storage and Conveyance Facilities That Could Convey Water to the Friant Division

2.2.1 Settlement Flow Schedules

The annual quantity of water to be released from Friant Dam as WY 2010 Interim Flows in the Proposed Action is defined by the hydrologic year-type classifications provided in Exhibit B, consistent with the Restoration Flow Guidelines (under preparation; see Appendix C). The allocated annual quantity will be applied to the hydrographs in Exhibit B and reduced, as appropriate, within the limits of channel capacity (see Table 2-4), anticipated infiltration losses, and diversion capacities. Additional reductions in flow could be made, in consideration of water supply demands, presence of special-status species, and potential seepage effects, as described in Section 2.2.3 and in the Seepage Monitoring and Management Plan. The resulting hydrograph would be subject to the application of flexible flow provisions described in Exhibit B, as recommended by the RA. For the reasons described in this EA/IS, Settlement provisions related to buffer flow and purchased water provisions are not being considered for WY 2010 Interim Flows. The schedule and magnitude of flow releases, as well as additional flow modifications, would be further defined under guidance provided in the Settlement.

Table 2-4.
Estimated Maximum Water Year 2010 Interim Flows by Reach

Reach	Estimated Deliveries[1] (cfs)	Infiltration Losses[1] (cfs)	Estimated Existing Channel Capacity[2] (cfs)	Estimated Maximum Flow in Reach[3,4] (cfs)
1	230	0	8,000	1,660
2A	0	200	8,000	1,475
2B	0	0	1,300	1,300
3	0	0	1,300	1,300
4A	0	0	4,500	1,300
4B1[5]	0	0	0	0
4B2	0	0	4,500	1,300
5	0	0	26,000	1,775[6]
Mariposa Bypass	0	0	8,500	1,300
Eastside Bypass Reach 1	0	0	17,000	1,300
Eastside Bypass Reach 2	0	0	16,500	1,300
Eastside Bypass Reach 3	0	0	13,500	1,300

Sources: McBain and Trush 2002; Resource Management Coalition 2003, 2007

Notes:

[1] Loss estimates incorporated into flow targets, as defined in Exhibit B of the Settlement. Includes infiltration losses in Reach 2, and water right diversions in Reach 1.

[2] Estimated existing nondamaging channel capacity is based on best available information and may be revised as new information becomes available as part of the SJRRP.

[3] Nonflood conditions.

[4] Does not include potential discontinuous local flow such as agricultural and natural drainage.

[5] The Proposed Action does not include any activity in Reach 4B1.

[6] Includes existing inflow from Mud and Salt sloughs of up to 500 cfs, as defined in Exhibit B.

Key:

cfs = cubic foot per second

Restoration Year-Type Classification

To facilitate future implementation of the Settlement, the SJRRP has developed a year-type classification system based on annual October-through-September unimpaired flow below Friant Dam from WY 1922 through 2004 (under preparation; see Appendix C), as shown in Table 2-5.

Table 2-5.
Restoration Year-Types as Defined in Exhibit B of the Settlement

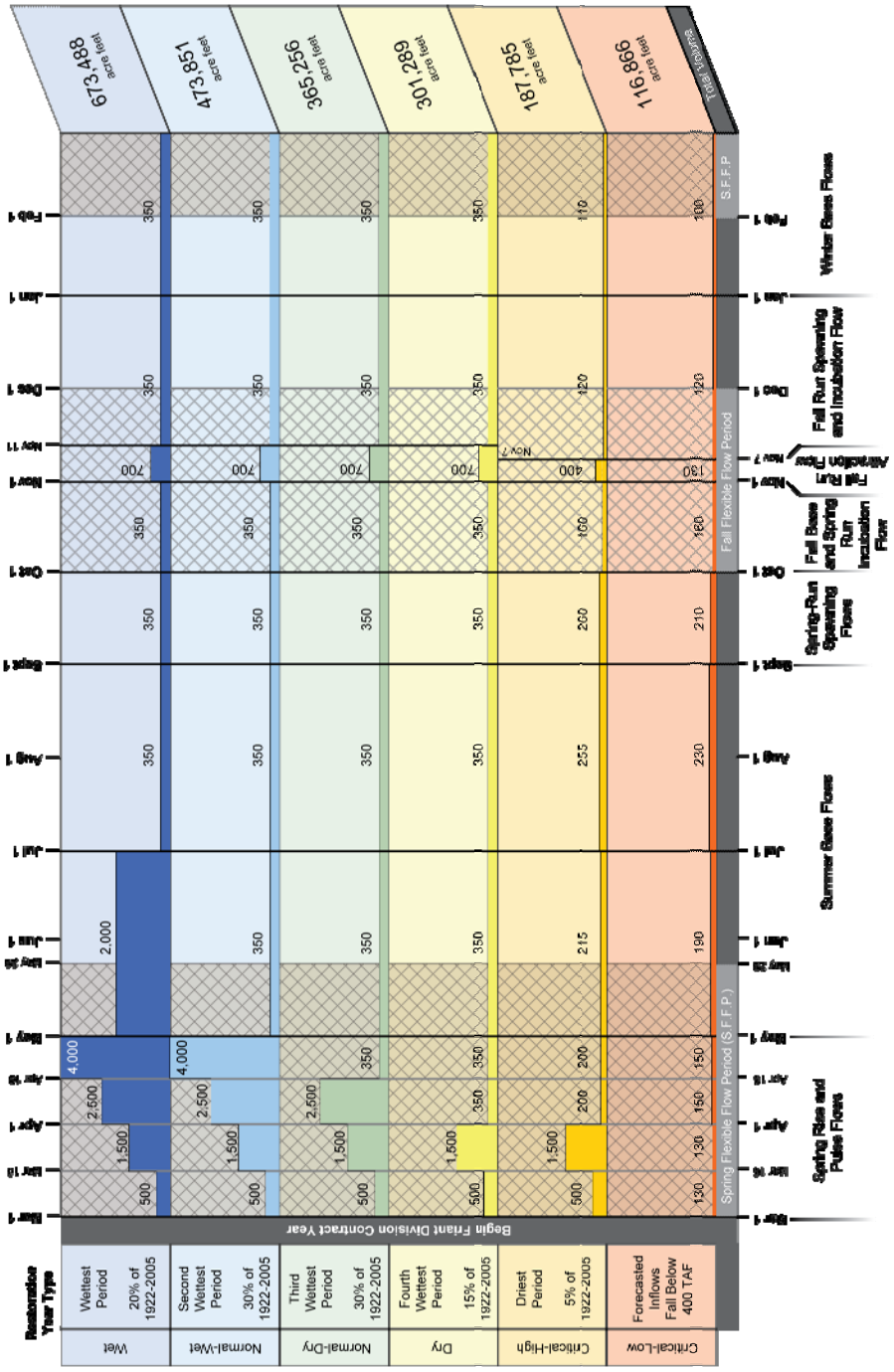
Restoration Year-Type[1]	Range of Unimpaired Inflow to Millerton Lake (acre-feet per year)	Percentage of Years from 1922 Through 2005
Wet	Greater than 2,500,000	20 percent
Normal-Wet	Greater than 1,450,000 to 2,500,000	30 percent
Normal-Dry	Greater than 930,000 to 1,450,000	30 percent
Dry	Greater than 670,000 to 930,000	15 percent
Critical-High	400,000 up to 670,000	5 percent
Critical-Low	Less than 400,000	

Note:
[1] A Restoration year begins October 1 and ends September 30 of the following calendar year.

The Restoration year-type for Interim Flow releases in 2009 and 2010 would be determined and finalized in June 2009 and June 2010, respectively, using information considered in making water supply allocations, including the DWR *Bulletin 120* forecast (to be finalized in May 2009).

Schedule and Magnitude of Restoration Flow Releases

The RA may recommend additional changes in specific release schedules, such as ramping rates, to smooth the transition through the hydrograph. Implementation of these recommended changes would be considered to the extent that they would not alter the total amount of water required to be released pursuant to the applicable hydrograph, and would not result in additional water delivery reductions to Friant Division long-term contractors. Alternative release schedules considered to date are described in Appendix C, "Friant Dam Releases for Restoration Flows" and shown in Figure 2-14 The Wet-year flow schedule, shown in Figure 2-2, identifies the estimated maximum effects associated with WY 2010 Interim Flow releases, but would be reduced, as appropriate, by the limits of channel capacity. This flow schedule is used to determine potential impacts in this EA/IS.



Notes:
All values in cfs unless otherwise noted

Figure 2-14.
Restoration Flow Schedules by Restoration Year-Type, as Specified in Exhibit B of the Settlement

Flow Modifications

The Settlement defines several additional modifications to flow schedules to benefit fisheries within the Restoration Area. These modifications include flexible flow periods, buffer flows, and the acquisition and release of additional water. Because Chinook salmon will not be reintroduced to the river during WY 2010, and because the purpose of WY 2010 Interim Flows is to collect relevant data, WY 2010 Interim Flows would not include the application of buffer flows or the release of additional water.

WY 2010 Interim Flow releases would be less than full Restoration Flows because of limited downstream channel capacities; potential material adverse effects from groundwater seepage; requirements of Federal, State, and local laws; and future agreements with downstream agencies, entities, and landowners. WY 2010 Interim Flows could include application of flexible flow periods to provide additional data collection opportunities. Application of flexible flow periods would be considered to the extent that they would not alter the total amount of water required to be released pursuant to the applicable hydrograph, and would not result in additional water delivery reductions to Friant Division long-term contractors. The volume of Restoration Flows above the estimated maximum WY 2010 Interim Flows would not be applied earlier or later within the flexible flow period to increase the total allocation made for the appropriate year-type, as illustrated in Figure 2-15.

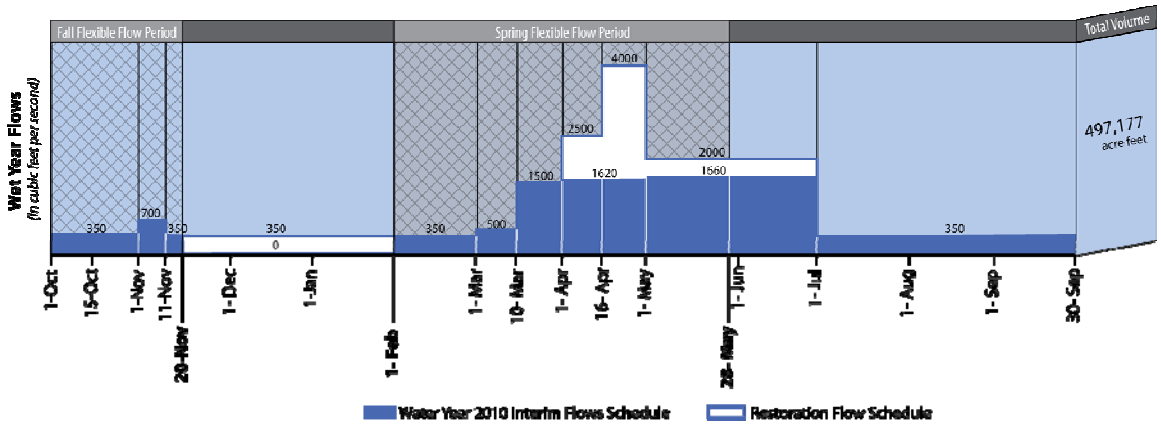


Figure 2-15.
Estimated Maximum Average Water Year 2010 Interim Flows from Friant Dam Assuming a Wet Year

2.2.2 Flow Considerations by Reach

The maximum downstream extent of WY 2010 Interim Flows that could be recaptured would be at the Jones and Banks pumping plants in the Delta. The Delta export facilities may react to the increased inflow, but will still operate consistent with existing operating criteria, prevailing and relevant laws, regulations, biological opinions (BO), and court orders in place at the time the water is recaptured. Maximum flows released from Friant Dam would be based on downstream conveyance capacity and forecasted water year-type. The river and flood bypasses within the Restoration Area are described as a series of physically and operationally distinct reaches, with channel capacity constraints, gains, and infiltration losses, as defined in the following sections. Considerations within each reach and below the Merced River confluence are described below.

Under existing nonflood conditions, most reaches of the San Joaquin River and the associated bypass system within the Restoration Area convey local agricultural return flows and runoff. Under flood conditions, seepage through levees has been observed. The release of WY 2010 Interim Flows would gradually increase to target flow rates and may be reduced, as necessary, to address seepage concerns.

The release of WY 2010 Interim Flows would be managed to avoid interfering with operations of the San Joaquin River Flood Control Project. This includes operations of the Chowchilla Bypass Bifurcation Structure, Sand Slough Control Structure, Eastside Bypass Bifurcation Structure, and Mariposa Bypass Bifurcation Structure, as well as San Joaquin River Flood Control Project levee maintenance. Specifically, under the Proposed Action, no change in flood operations at the Chowchilla Bypass Bifurcation Structure would occur. Releases of flood flows to the San Joaquin River would remain constrained by the capacity of the portion of Reach 2B below the Chowchilla Bypass Bifurcation Structure. The Lower San Joaquin Levee District regularly conducts operation and maintenance (O&M) activities to maintain channel capacity within the San Joaquin River Flood Control Project. These O&M activities would continue under the Proposed Action, and could occur more frequently.

Reach 1

Channel capacity in Reach 1 is approximately 8,000 cfs, which exceeds the estimated maximum potential flow releases from Friant Dam under the WY 2010 Interim Flows. Therefore, channel capacity would not limit WY 2010 Interim Flows in Reach 1. The Exhibit B flow schedules include assumed Holding Contract Releases to Reach 1, as shown in Table 2-6 and Figure 2-16. Estimated maximum flows under the Proposed Action, as shown in Table 2-1, include releases to meet these diversions. Because this channel carries continuous flow under existing conditions, Reach 1 is not expected to lose water through infiltration of flows released over and above Reach 1 Holding Contract Releases. Figure 2-9 shows the Exhibit B target flows in Reach 1 for Wet years under the Proposed Action, as compared with the Wet under the No-Action Alternative. Figure 2-10 shows the Exhibit B target flows in Reach 1 for Normal-Dry years under the Proposed Action, compared with the Normal-Dry under the No-Action Alternative.

Table 2-6.
Riparian Releases Identified in Reach 1 in Exhibit B of the Settlement

WY 2010 Interim Flow Dates		Reach 1 Riparian Releases (cfs)
Beginning Date	Ending Date	
10/1/2009	10/31/2009	160
11/1/2009	11/6/2009	130
11/7/2009	11/10/2009	130
11/11/2009	11/20/2009	120
11/21/2009	1/31/2010	120
2/1/2010	2/28/2010	100
3/1/2010	3/15/2010	130
3/16/2010	3/31/2010	130
4/1/2010	4/15/2010	150
4/16/2010	4/30/2010	150
5/1/2010	6/30/2010	190
7/1/2010	8/31/2010	230
9/1/2010	9/30/2010	210

Key:
cfs = cubic feet per second
WY = water year

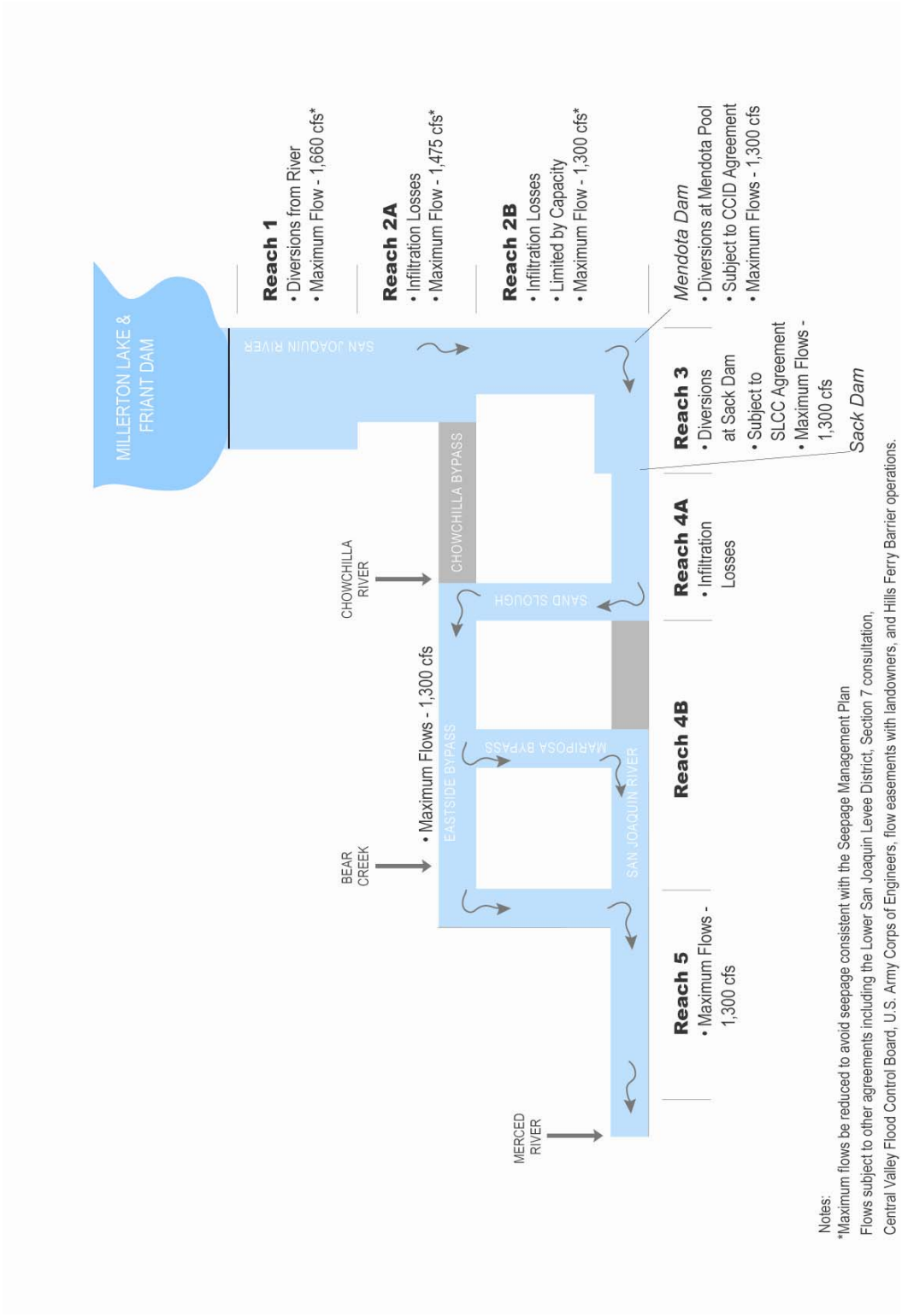


Figure 2-16.
Interim Flows, Water Deliveries, Diversions, and Infiltration Losses in the Restoration Area

Reach 2

Estimated maximum WY 2010 Interim Flows would be constrained by the existing channel capacity of Reach 2B. DWR has estimated the channel capacity in Reach 2B to be 1,500 cfs. Local landowners have stated that the conveyance capacity of Reach 2B is approximately 1,300 cfs (RMC 2007). Therefore, until additional information can be gathered to better understand the channel capacity in Reach 2B, estimated maximum WY 2010 Interim Flows would not exceed a flow of 1,300 cfs in Reach 2B (Figure 2-11 shows the estimated maximum flows at the head of Reach 2B in Wet years). To accommodate this presumed capacity limitation, WY 2010 Interim Flow releases at Friant Dam would be less than the quantity included in the Exhibit B flow schedules from April 1 to June 30 of 2010, if the year-type is determined to be Normal-Dry, Normal-Wet, or Wet. Table 2-4 shows the capacity restrictions on estimated maximum flows, reflecting nonflood conditions in a wet year.

The Exhibit B flow schedules include assumptions about infiltration losses in Reach 2A, as shown in Table 2-7. Estimated maximum flows under the Proposed Action, as shown in Table 2-4, include these losses.

Table 2-7.
Infiltration Losses Identified for Reach 2A and in Exhibit B

Dates of Interim Flow Release		Infiltration Losses in Reach 2A by Year-Type (cfs)					
Beginning Date	**Ending Date**	**Critical-Low**	**Critical-High**	**Dry**	**Normal-Dry**	**Normal-Wet**	**Wet**
10/1/2009	10/31/2009	80	80	80	80	80	80
11/1/2009	11/6/2009	100	100	100	100	100	100
11/7/2009	11/10/2009	80	80	100	100	100	100
11/11/2009	11/20/2009	80	80	80	80	80	80
11/21/2009	1/31/2010	*No WY 2010 Interim Flows During this Period*					
2/1/2010	2/28/2010	80	80	80	80	80	80
3/1/2010	3/15/2010	90	90	90	90	90	90
3/16/2010	3/31/2010	150	150	150	150	150	150
4/1/2010	4/15/2010	80	80	80	175	175	175
4/16/2010	4/30/2010	80	80	80	80	200	200
5/1/2010	6/30/2010	80	80	80	80	80	165
7/1/2010	8/31/2010	80	80	80	80	80	80
9/1/2010	9/30/2010	80	80	80	80	80	80

Key:
cfs = cubic feet per second
WY = water year

WY 2010 Interim Flows would flow through Reach 2 and the Mendota Pool, unless downstream considerations (such as channel capacity or presence of special-status species) require that less (or no) flow enters Reach 3. Under the Proposed Action, WY 2010 Interim Flows could be diverted from the Mendota Pool to the extent that these flows would meet demands, replacing CVP water supplies that would otherwise be delivered via the DMC. The DMC carries water from the Delta to the Mendota Pool, where it is diverted through several existing pumps and canals with a combined capacity that exceeds upstream channel capacity, and would therefore not constrain WY 2010 Interim Flows. WY 2010 Interim Flows diverted by CVP contractors at the Mendota Pool would be in-lieu of supplies typically delivered via the DMC. Therefore, CVP water

supplies that would have been delivered via the DMC would be made available for delivery to the Friant Division, subject to existing contractual obligations and existing and future agreements.

Central California Irrigation District (CCID) operates and maintains Mendota Dam in Reach 2. CCID is responsible for maintaining Mendota Dam under a very narrow operating range and provides no operational storage for water supply operations (RMC 2003). The San Luis Delta Mendota Water Authority (SLDMWA) operates and maintains the Mendota Pool on behalf of Reclamation. The Mendota Pool is held at a fairly constant elevation between 14.2 feet above mean sea level (msl) (elevation 14.2) and elevation 14.5 to maintain water deliveries to water users in the upper end of the Mendota Pool/Fresno Slough areas (RMC 2003). To maintain this constant elevation, releases from Mendota Dam need to be made via the gates and with boards at the dam in place. The gates have a release capacity of approximately 1,500 cfs. Under the Proposed Action, operations at the Mendota Pool would continue to maintain water surface elevations within the range of existing operations.

Reach 3

Reach 3 currently conveys flows from the Mendota Dam to the Arroyo Canal at Sack Dam for diversion. Diversions to the Arroyo Canal range from zero to 800 cfs, and typically do not exceed 600 cfs. Flows in Reach 3 vary based on the time of year, water demands, and available water supplies. Release constraints at the Mendota Pool are implemented to avoid potential adverse effects associated with the diversion capabilities identified above. The RMC has reported that Reach 3 conveys up to 800 cfs of water for irrigation diversions at Sack Dam, and that higher flows (less than 4,500 cfs) can cause seepage and levee stability problems in this reach (2007). In 2006, the U.S. Geological Survey (USGS) recorded a mean maximum daily discharge of 4,590 cfs; DWR reported that seepage occurred on lands in and adjacent to the floodway at this time. DWR has estimated the capacity of interior levees in this reach to be 1,300 cfs with 3 feet of freeboard (see Appendix C). WY 2010 Interim Flow releases from Mendota Dam would be reduced in proportion to releases from Mendota Dam by the San Joaquin River Exchange Contractors for diversion at the Arroyo Canal, such that the combined WY 2010 Interim Flows and irrigation supply flows would not exceed an estimated maximum of 1,300 cfs. Because Reach 3 currently conveys flow, it is assumed that infiltration losses related to WY 2010 Interim Flows in Reach 3 would be negligible.

WY 2010 Interim Flows would flow through Reach 3 and Sack Dam, unless downstream considerations (such as channel capacity or potentially adverse effects) require that less flow enters downstream reaches, as described above for Reach 2. Under the Proposed Action, WY 2010 Interim Flows could be diverted at the Arroyo Canal to the extent that these flows would meet demands (up to 800 cfs), replacing CVP water supplies that would otherwise be delivered via the Mendota Pool and DMC. This diversion could be combined with diversions at the Mendota Pool, as described above, and/or with reductions in flow release at Friant Dam to reduce inflow to Reach 4A.

Reach 4A

The estimated maximum flow in Reach 4A under the Proposed Action (nonflood conditions) would be 1,300 cfs because of upstream constraints described above for Reach 2B. No factors were identified in Reach 4A that would reduce or otherwise constrain WY 2010 Interim Flows.

Exhibit B assumes that Reach 4A experiences seasonal losses; however, these losses are not specified. Because Reach 4A conveys no flow in most years (i.e., is a dry channel), some initial infiltration losses are anticipated in this reach under WY 2010 Interim Flows. Flows would be monitored at the locations identified in Appendix A to provide relevant information regarding infiltration losses.

WY 2010 Interim Flows at the downstream end of Reach 4A would be conveyed through Sand Slough to the Eastside Bypass. These flows would not be conveyed into Reach 4B1 because the capacity of Reach 4B1 is not currently known, and may be zero in some locations.

Eastside and Mariposa Bypasses

The estimated maximum WY 2010 Interim Flows conveyed to the Eastside and Mariposa bypasses would be 1,300 cfs because of upstream capacity constraints in Reach 2B, as described above. WY 2010 Interim Flows would enter Eastside Bypass Reach 2 via Sand Slough. Flows would either be routed through the Mariposa Bypass back to the San Joaquin River at the head of Reach 4B2, or through Eastside Bypass Reach 3 back to the San Joaquin River at the head of Reach 5.

Conveyance of WY 2010 Interim Flows through the Eastside and Mariposa bypasses would be limited, as necessary, by biological requirements determined through currently ongoing field surveys for listed species. In addition, agreements would be required with Eastside Bypass landowners to allow conveyance of WY 2010 Interim Flows. WY 2010 Interim Flows would be conveyed through the bypasses to Reaches 4B and 5, unless downstream considerations (such as channel capacity or potential take of listed species that could not be avoided) require that less (or no) flow enters the downstream reaches. Flow considerations in Eastside Bypass Reaches 2 and 3, and in the Mariposa Bypass, are discussed below.

Eastside Bypass Reach 2. If downstream considerations (such as channel capacity or potentially adverse effects) require that less (or no) flow enters reaches downstream from Eastside Bypass Reach 2, WY 2010 Interim Flows could be diverted in Eastside Bypass Reach 2 to the Lone Tree Unit (up to 20 cfs).

Under the Proposed Action, WY 2010 Interim Flows could be diverted at the Lone Tree Unit to the extent that these flows would meet demands, replacing other water supplies including Merced Irrigation District deliveries. This diversion could be combined with diversions at the Mendota Pool and/or Arroyo Canal, as described for Reaches 2 and 3, and/or with reductions in flow release at Friant Dam to reduce or eliminate inflow to Eastside Bypass Reach 3.

The Lone Tree Unit has historically diverted water from Eastside Bypass Reach 2 using a 25-horsepower permanent lift station last operated in 1997 (Forrest, pers. comm., 2009). The Lone Tree Unit currently diverts water from the Eastside Bypass using a 350-horsepower portable pump. The pumps are ordinarily operated in conjunction with weirs to back up water in the bypass to provide temporary habitat for waterfowl. To maintain suitable conditions within the ponded water, flow-through is maintained past the weirs.

Eastside Bypass Reach 3. If considerations in Mariposa Bypass and Reach 4B2 or in downstream reaches (such as channel capacity or potential take of listed species that could not be avoided) require that less (or no) flow enters those reaches, WY 2010 Interim Flows could be diverted to the East Bear Creek Unit in Eastside Bypass Reach 3.

Under the Proposed Action, WY 2010 Interim Flows could be diverted at the East Bear Creek Unit to the extent that these flows would meet demands, replacing CVP water supplies that would otherwise be delivered via the Mendota Pool and DMC. This diversion could be combined with diversions at the Mendota Pool, Arroyo Canal, and/or the Lone Tree Unit, as described for Reaches 2 and 3 and Eastside Bypass Reach 2, and/or with reductions in flow releases at Friant Dam to reduce or eliminate inflow to Eastside Bypass Reach 3.

The East Bear Creek Unit has a pump lift station in the Eastside Bypass with a diversion capacity of 60 cfs. This pump stations features a 48-inch-diameter intake structure and four 125-horsepower electric motors driving 15 cfs pumps. Under these circumstances, deliveries of WY 2010 Interim Flows to the East Bear Creek Unit would be further constrained by actual demand for water supplies at the East Bear Creek Unit.

The diversion of WY 2010 Interim Flows at the East Bear Creek Unit could be exchanged for CVP water supplies that otherwise would be delivered to the East Bear Creek Unit. These CVP water supplies would then be available for recirculation to the Friant Division. Recirculation would be subject to available capacity within CVP/SWP storage and conveyance facilities, as shown in Figure 2-1, including the Jones and Banks pumping plants, the California Aqueduct, the DMC, San Luis Reservoir and related pumping facilities, and other facilities of CVP/SWP contractors. The Delta export facilities may react to the increased inflow, but will still operate consistent with existing operating criteria, consistent with prevailing and relevant laws, regulations, biological opinions (BO), and court orders in place at the time the water is recaptured.

Mariposa Bypass. The estimated maximum flow in the Mariposa Bypass under the Proposed Action (nonflood conditions) would be 1,300 cfs because of upstream capacity constraints described above for Reach 2B. Conveyance of WY 2010 Interim Flows through the Mariposa Bypass would be limited, as described above, by biological requirements determined through field surveys for listed species. If downstream considerations require that less (or no) flow enters those reaches, WY 2010 Interim Flows would be diverted in upstream reaches, as described above.

Reach 4B

WY 2010 Interim Flows would not enter Reach 4B1. WY 2010 Interim Flows could be routed through Eastside Bypass Reach 2 and the Mariposa Bypass and conveyed to Reach 4B2, as shown in Figure 2-16. No factors were identified in Reach 4B2 that would reduce or otherwise constrain WY 2010 Interim Flows. Because of upstream capacity constraints in Reach 2B, as described above, the estimated maximum WY 2010 Interim Flow conveyed to Reach 4B2 would be 1,300 cfs.

Exhibit B states that Reach 4B is likely a gaining reach, but additional flows gained are not quantified in the Exhibit B flow schedules. The additional flows occur under the Existing Condition and under the Proposed Action, but are not reflected in the estimated maximum flows shown in Tables 2-1 through 2-4.

Reach 5

The estimated maximum flow at the head of Reach 5 under the Proposed Action (nonflood conditions) would be 1,300 cfs because of upstream capacity constraints described above for Reach 2B. No factors were identified in Reach 5 that would reduce or otherwise constrain WY 2010 Interim Flows.

Accretions in Reach 5 of up to 500 cfs from Mud and Salt sloughs are assumed in Exhibit B, are reflected in the estimated maximum flows shown in Tables 2-1. Exhibit B assumes that Reach 5 gains additional flows of up to 50 cfs from other sources, but these are not incorporated in the Exhibit B flow schedules. These flows occur under the existing condition and under the Proposed Action, but are not reflected in the estimated maximum flows shown in Tables 2-1 through 2-2.

San Joaquin River Downstream from the Merced River Confluence

WY 2010 Interim Flows reaching the confluence of the Merced River could increase San Joaquin River flows by up to 1,300 cfs. The Merced, Tuolumne, and Stanislaus rivers are the three main tributaries to the San Joaquin River. Releases from major reservoirs on the three main tributaries are made in response to multiple operational objectives, including flood management, downstream diversions, instream fisheries flows, instream water quality flows, and releases to meet water quality and flow objectives at Vernalis as part of requirements under the Vernalis Adaptive Management Program (VAMP). VAMP is an experimental program to determine how salmon survival rates change in response to alterations in flow releases (primarily from tributary reservoirs) and in SWP/CVP export levels that are based on flow conditions on the San Joaquin River at Vernalis. VAMP flows include a 31-day pulse in April and May of up to 110 TAF depending on estimated unimpaired flow conditions. The San Joaquin River Agreement (SJRA) sets up the structure for VAMP by identifying where water to support VAMP would be obtained, specifically from the San Joaquin River Group Authority (SJRGA) whose members are making the water available. The SJRA precludes the use of water released from Friant Dam which is otherwise intended for use within the Friant Division of the CVP, other than water acquired from willing sellers. As part of CVPIA (Reclamation 1997), Reclamation leads the VAMP planning process, setting VAMP targets and flow conditions in coordination with the SWRCB and other agencies. Although the SJRA identifies general parameters for the VAMP experiments, in past

years the participating entities have adapted the specific experimental design to accommodate real-time conditions in a given year, applying mutually agreed upon flexibility for the experimental program. The current funding agreement for the VAMP experiments expires in December 2009. The future of VAMP is uncertain and Reclamation and the SJRA participants are discussing the future approach for VAMP, but no decisions have been made at the time of publication of this Draft EA/IS. In response to WY 2010 Interim Flows, tributary releases to meet VAMP water quality objectives at Vernalis would be affected (further description of the effects on VAMP is included in Section 4).

Sacramento-San Joaquin Delta

WY 2010 Interim Flows reaching the Delta, which would not exceed 1,300 cfs, could be rediverted at existing CVP and SWP export facilities operated under existing regulatory requirements and institutional agreements subject to a 1725 temporary permit that would provide for rediversion of Friant CVP water and storage at San Luis Reservoir. Such re-diversion would in all events be limited to flows directly attributable to WY 2010 Interim Flows. Available capacity within CVP/SWP storage and conveyance facilities could be used to facilitate exchanges and conveyance of water to the Friant Division by using recaptured Delta Water supplies. In addition, even if Interim Flows are not exported from the Delta, they would contribute to meeting regulatory requirements in the Delta that could indirectly reduce a commensurate quantity of water released from upstream reservoirs to meet regulatory requirements. Recirculation would be subject to available capacity within CVP/SWP storage and conveyance facilities, including the Jones and Banks pumping plants, the California Aqueduct, the DMC, San Luis Reservoir and related pumping facilities, and other facilities of CVP/SWP contractors, as shown in Figure 2-13.

Evaluations of surface water resources and interrelated resources (e.g., water quality, fisheries, groundwater, socioeconomics) for this Draft EA/IS are based on a CalSim representation prepared in 2005 that reflects coordinated CVP/SWP long-term operations BOs in place at that time. Those BOs address the combined operational and regulatory setting under which the CVP and SWP facilities are operated. USFWS issued a new long-term operations BO in 2008, and NMFS is expected to issue a new long-term operations BO on listed Chinook salmon, steelhead, and green sturgeon in June 2009. Because the 2009 NMFS BO is still pending, and representations of 2008 USFWS BO Reasonable and Prudent Alternative (RPA) within numerical modeling tools are under development, the 2005 BO representation within CalSim is an appropriate tool for comparison purposes at this time. Further, the Proposed Action would continue to be in compliance with current or future long-term operations BOs.

2.2.3 Additional Implementation Considerations

Additional implementation considerations, such as potential environmental, regulatory, or legal issues, could further limit the release of WY 2010 Interim Flows, as described below.

Water Supply Demand

The maximum quantity of WY 2010 Interim Flows that could be diverted from the Restoration Area is limited by the combined diversion capacity at all identified diversion points. Actual diversions would be made according to demand for water supplies at these diversion points.

Implementation Agreements

Implementing the WY 2010 Interim Flows would require several agreements with local agencies. WY 2010 Interim Flows would be constrained by agreements in place at the time of release. These include agreements with the San Joaquin River Exchange Contractors and USFWS regarding the timing and quantity of diversions. Additional agreements may include the following:

- **Central California Irrigation District** – As described above, CCID operates and maintains Mendota Dam. As part of normal operations, CCID dewaters the Mendota Pool approximately once every other year between November 25 and January 15 (RMC 2003) to conduct California Division of Safety of Dams inspections. The Mendota Pool is scheduled to be dewatered from November 26, 2009 through the end of the year. Agreements may be required with CCID to route WY 2010 Interim Flows through Mendota Dam.

- **San Luis Canal Company** – San Luis Canal Company (SLCC) operates Sack Dam at the end of Reach 3. Sack Dam is a 5-foot- high concrete and wood diversion structure delivering water to the Arroyo Canal on the west side of the San Joaquin River. Under typical baseflow conditions, all water reaching Sack Dam is diverted to the Arroyo Canal. Flows greater than those required for diversion, including flood flows, spill over Sack Dam into the San Joaquin River. Agreements with SLCC may be required to route WY 2010 Interim Flows over Sack Dam.

- **Lower San Joaquin Levee District** – Agreements with the Lower San Joaquin Levee District may be required to operate, inspect, and maintain flood control facilities including levees, channels, flap gates, and bifurcation structures. These activities may include patrolling of levees to assess conditions, maintain channels, close flap gates prior to release of WY 2010 Interim Flows, and operate the Chowchilla, Eastside, and Mariposa bypass bifurcation structures.

- **U.S. Army Corps of Engineers** – Regulatory approval from the U.S. Army Corps of Engineers (USACE) may be required to release Interim Flows from Friant Dam.

- **Central Valley Flood Protection Board** – Regulatory approval from the Central Valley Flood Protection Board may be required to release WY 2010 Interim Flows into the Eastside Bypass.

- **Landowners in the Eastside and Mariposa Bypasses** – Currently, the State holds flood flowage easements for lands within portions of the Eastside Bypass and all of the Mariposa Bypass. Additional agreements with landowners may be required to convey WY 2010 Interim Flows within the bypass system.

- **San Luis Delta Mendota Water Authority** – SLDMWA operates and maintains the Mendota Pool. Agreements with SLDMWA may be required to route WY 2010 Interim Flows through the Mendota Pool.

Reclamation has initiated discussions with Central California ID, San Luis Canal Company, Lower San Joaquin Levee District, and staff at the Central Valley Flood Protection Board regarding implementing the Proposed Action. These discussions are ongoing. All agreements must be in place before introducing WY 2010 Interim Flows into the respective area of the river. Additionally, the amount of WY 2010 Interim Flows may be limited if any of the above agreements cannot be reached and/or if the terms of any of the above agreements include activities that limit flows.

Special-Status Species

The presence of certain special-status species in the study area may determine specific quantities and routing of instream flows, as discussed below.

Delta Fish Species. Ongoing consultations on Delta fish species with USFWS, NMFS, and DFG are occurring to comply with the Federal ESA; consultation is required to implement the Proposed Action. The maximum downstream extent of WY 2010 Interim Flows that could be recaptured would be at the Jones and Banks pumping plants. Recapture of WY 2010 Interim Flows at the Jones and Banks pumping plants would be subject to existing or future regulatory requirements and would be done in compliance with existing or future long-term operations BOs.

Blunt-Nosed Leopard Lizard Preflow Release Surveys. In the absence of avoidance measures, blunt-nosed leopard lizard (BNLL) could be adversely affected in the Eastside and Mariposa bypasses. Because BNLL is a fully protected species under the California Fish and Game Code (F&GC 5050 et seq.), DFG cannot authorize any type of take of BNLL. The presence of BNLL would be determined based on the results of preflow release surveys of the Eastside and Mariposa bypasses conducted by qualified biologists, in accordance with USFWS and DFG survey methodologies for BNLL developed specific to the SJRRP. Surveys would be conducted for 12 days during the adult optimal survey period (April 15 to July 15), with a maximum of 4 days per week and 8 days within any 30-day time period. At least one survey would be conducted for 4 consecutive days. In addition, surveys would be conducted for 5 days during the hatchling optimal survey period (August 1 to September 15).

If an area that may have suitable habitat has not been surveyed for BNLL, flows that could potentially inundate habitat would not be released in that area. If surveys identify the presence of BNLL, DFG has indicated that no mitigation is available for this fully protected species. No measures to avoid take of BNLL have been identified beyond withholding flows from reaches with identified habitat. Based on information gathered

during BNLL surveys, avoidance measures would be identified as needed. If these avoidance measures are agreed on during consultation with DFG and USFWS, and implemented to fully avoid take of BNLL, WY 2010 Interim Flows could still be routed through areas with known BNLL habitat. If the surveys reveal presence of BNLL, and no avoidance measures can be identified, agreed on, and implemented, WY 2010 Interim Flows would not be released into the Eastside or Mariposa bypasses.

Vernal Pool, Delta Button-Celery, and Alkali Sink Avoidance in Eastside and Mariposa Bypass. The release of WY 2010 Interim Flows into the Eastside and/or Mariposa bypasses would depend on the ability to determine that flows would remain within the existing low-flow channel in the bypasses or otherwise would avoid inundating vernal pools, floodplain habitat occupied by Delta button-celery, or alkali sink habitat potentially suitable for palmate-bracted bird's-beak. Seepage and vegetation monitoring surveys during Interim Flow releases would be used to determine whether Interim Flows need to be reduced to avoid impacts to these species' habitats.

2.2.4 Environmental Commitments

Environmental commitments provided below outline planning and programs that would be conducted in coordination with WY 2010 Interim Flows implementation to avoid any potentially adverse environmental consequences.

Vehicular Traffic Detour Planning

Convenient and parallel vehicular traffic detours would be provided for routes closed because of inundation by WY 2010 Interim Flows. A detour plan would be prepared and implemented in accordance with current California Department of Transportation Standard Plans and Specifications. The detour plan would be implemented before roadway inundation.

Recreation Outreach Program

A recreation outreach program would be conducted before and during implementation of the Proposed Action, beginning in summer 2009 and extending through the WY 2010 Interim Flows period, ending in September 2010. The purpose of the recreation outreach program would be to inform recreating public, as well as agencies and organizations that serve the recreating the public, of changes in river flows that would occur as a result of the Proposed Action, and of the potential effects associated with those changes, including recreational boating hazards. The program would also inform the public of similar alternative boating opportunities in the area, such as those available on the lower Kings River below Pine Flat Reservoir.

The outreach program would make use of a variety of methods and media to share information with the recreating public. These would include messages posted on the SJRRP Web site and Web sites of agencies and organizations providing recreation access, facilities, and services in Reach 1; signage at public and private access points and facilities in Reach 1; and verbal messages delivered as part of regular recreation programs offered by agencies and organizations, such as the Public Canoe Program conducted by the San Joaquin River Parkway and Conservation Trust. Additional means of disseminating information as part of the outreach program would include the

attendance of a SJRRP representative at selected public events focused on San Joaquin River recreation, or the display and distribution of printed materials at such events.

Central to the outreach program would be coordination with agencies and organizations that provide recreation access, facilities, and services in Reach 1, where most recreation in the Restoration Area takes place. Specifically, this would include the following public and nonprofit agencies and organizations: the San Joaquin River Parkway and Conservation Trust, San Joaquin River Conservancy, Fresno County, and DFG. Coordination would also include private entities that provide public recreation access and facilities at a few locations in Reach 1.

2.2.5 Water Year 2010 Interim Flows Seepage Monitoring and Management Plan

The Act (see Appendix B) requires that a seepage monitoring program be prepared before releasing Interim Flows. The Seepage Monitoring and Management Plan (Appendix D) describes the monitoring and management guidelines included in the Proposed Action as related to groundwater or levee seepage. Some portions of the Restoration Area have historically experienced groundwater seepage to adjacent lands associated with elevated flows. Groundwater seepage has the potential to cause waterlogging of crops and salt mobilization in the crop root zone. Similarly, some portions of the Restoration Area have experienced levee instability resulting from through-levee and under-levee seepage during periods of elevated flows.

As part of the SJRRP, monitoring wells are being permitted and installed at several transects along the San Joaquin River in the Restoration Area to identify groundwater level responses to river flows. Reclamation and DWR would monitor groundwater levels in installed wells. Observed groundwater levels would be used by the Secretary in determining when to reduce flow releases from Friant Dam as required by the Act. Following installation of each monitoring well, groundwater elevations thresholds would be developed in consideration of nearby land uses, known groundwater and subsurface conditions, and other information available or provided by landowners.

In general, groundwater depth thresholds would be classified in three ranges, as illustrated in Figure 2-17. These include an acceptable level at which groundwater levels are not expected to affect agricultural production; a potential buffer zone indicating an increased likelihood that seepage could affect agricultural production without flow modification; and a threat zone representing groundwater levels that affect agricultural production. The Proposed Action includes flow reductions in response to groundwater levels observed in the buffer or threat zones.

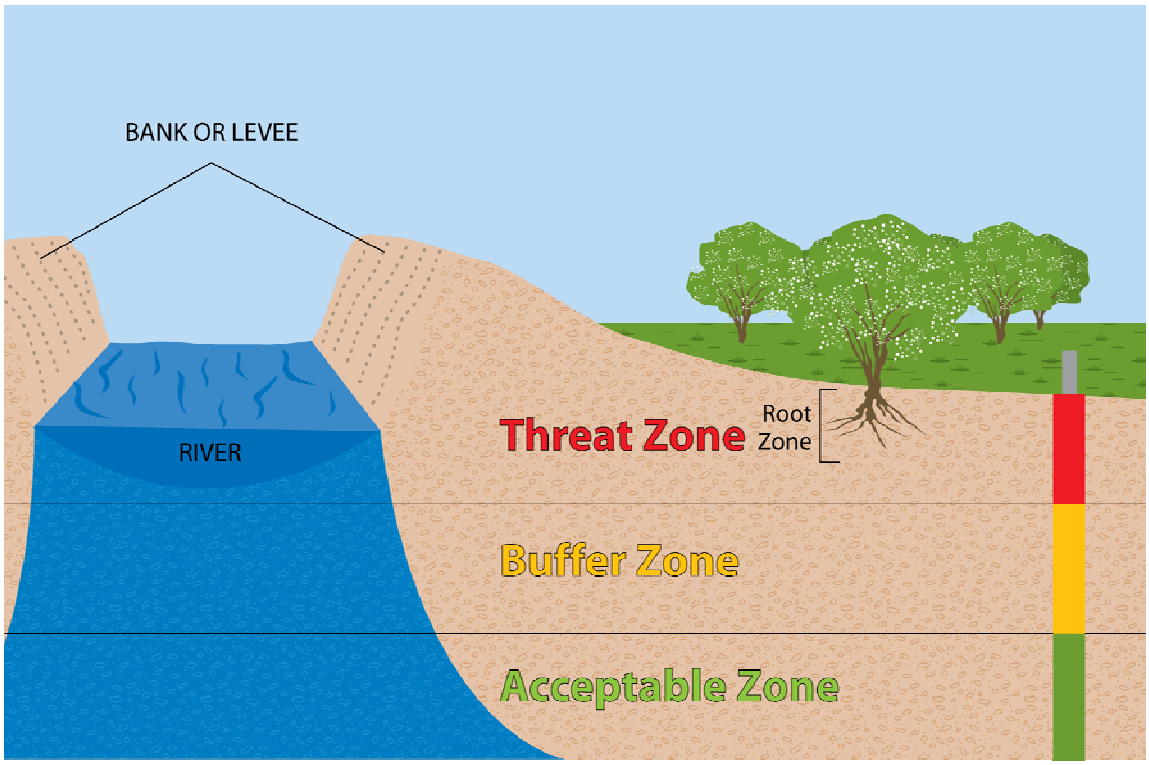


Figure 2-17.
Potential Groundwater Seepage Threshold Zones

Other potential thresholds that would be used to identify the need for action include the following:

- Surface water stage corresponding to known or observed levee stability problems and lateral seepage
- Visual observation of boils or piping
- Landowner communication of observed seepage problems

If groundwater levels at a monitoring well exceed an identified threshold, WY 2010 Interim Flows would be reduced or diverted.

2.2.6 Flow Monitoring

The Act (see Appendix B) requires that a flow monitoring program be prepared before releasing Interim Flows. The Flow Monitoring and Management Plan (Appendix E) describes management objectives for WY 2010 Interim Flows, approaches for measuring WY 2010 Interim Flows, conditions indicating that management objectives have been attained, and potential actions that could be taken to address nonattainment of the WY 2010 Interim Flow objectives. The Flow Monitoring and Management Plan will include measurement of streamflows at six locations within the Restoration Area.

2.2.7 Hills Ferry Barrier

The current Hills Ferry Barrier is a type of resistance weir commonly used to exclude and/or trap anadromous fish in rivers. This barrier consists of panels aligned perpendicular to the flow of the river with evenly spaced pipes that allow water, small fish, and particles to pass but prevent larger anadromous fish such as Chinook salmon from passing upstream. Operated by DFG since 1992, the Hills Ferry Barrier is typically installed in mid-September and operated until it is removed in early December. DFG currently operates the Hills Ferry Barrier near the town of Newman, approximately 300 feet upstream from the confluence with the Merced River (in Reach 5).

The barrier's main purpose is to redirect upstream-migrating adult fall-run Chinook salmon into suitable spawning habitat in the Merced River and prevent migration into the mainstem San Joaquin River upstream, where conditions are currently unsuitable for Chinook salmon. The adult Central Valley steelhead migration period overlaps with fall-run Chinook salmon, and typically occurs between October and December in the San Joaquin basin. Because they have a body type similar to salmon, Central Valley steelhead would be expected to be redirected by the barrier in a similarly effective manner. Maintenance of the Hills Ferry Barrier would continue for the purpose of redirecting Chinook salmon and, incidentally, Central Valley steelhead during the fall WY 2010 Interim Flow period.

NMFS permits the take of Federally listed threatened species for rescue and salvage by various State and nongovernmental agencies through the ESA Section 10a(1)A and 4(d) rules. In the unlikely event that ESA-listed anadromous fish, including Central Valley steelhead, stray into San Joaquin River reaches above the Merced River, these fish could be salvaged under these authorities. Additionally, DFG applies annually for an ESA Section 4(d) research permit and accompanying take limit for Central Valley steelhead from NMFS for operation of the barrier. In 2008, DFG was allowed to take up to five Central Valley steelhead. DFG was issued a permit for 2009 (expires on December 31, 2009) with a take limit of 10 Central Valley steelhead. In addition, the 2009 permit authorizes the taking of fin clippings. If Central Valley steelhead are encountered at or above the Hills Ferry Barrier during fall Interim Flows, the Central Valley steelhead would be released downstream in suitable reaches as required by the permit.

Historic streamflow conditions upstream from the Merced River confluence during the spring averaged from 119 cfs to 13,050 cfs, with peak flows reaching 59,000 cfs in 1997. WY 2010 Interim Flows may add an average of up to 220 cfs at this location beginning on February 1, 2010. The average annual flows under the Proposed Action are within 7 percent of the average flow expected at this time and location under existing conditions. This small increase is not anticipated to trigger any change to Central Valley steelhead migration patterns in the San Joaquin Basin. As well, WY 2010 Interim Flows will not be released if natural flows approach channel capacity. However, the Proposed Action will develop a monitoring plan prior to February 1, 2010, to check for Central Valley steelhead in the Restoration Area during spring Interim Flows. In the event a steelhead is encountered in the Restoration Area, NMFS will be notified immediately. In addition, stranded steelhead will be recovered and returned downstream in an appropriate location designated by DFG and/or NMFS.

2.3 Other Alternatives

No other feasible or practicable alternatives are available to meet the project purpose and objectives. To meet the Settlement requirements, Interim Flows must be released under a specific schedule to the extent feasible. The Proposed Action is the only action alternative that is available to meet the project purpose and objectives.

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