DRAFT Environmental Assessment

One-Year Recapture of San Joaquin River Restoration Flows at Patterson Irrigation District and/or Banta-Carbona Irrigation District

December 2015

Table of Contents

Tables

Figures

List of Abbreviations and Acronyms

Act	San Joaquin River Restoration Settlement Act
AF	acre-feet
BCID	Banta-Carbona Irrigation District
CAA	Clean Air Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
D-1641	State Water Resources Control Board Water Right Decision 1641
Delta	Sacramento–San Joaquin River Delta
DMC	Delta-Mendota Canal
DWR	California Department of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Federal Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gas
ITA	Indian Trust Assets
M&I	municipal and industrial
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRDC	Natural Resources Defense Council
NRHP	National Register of Historic Places
PEIS/R	Program Environmental Impact Statement/ Report
PID	Patterson Irrigation District
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
ROD	Record of Decision
Settlement	Stipulation of Settlement in *NRDC, et al., v. Kirk Rodgers, et al.*
SJRRP	San Joaquin River Restoration Program
Restoration Flows	San Joaquin River Restoration Flows
SJVAB	San Joaquin Valley Air Basin

SJVAPCD	San Joaquin Valley Air Pollution Control District
SWP	State Water Project
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
WCY	Water Contract Year
Recirculation EA	Final Recirculation of Recaptured Water Year 2013-2017 San Joaquin River Restoration Program Flows Environmental Assessment, April 2013

Definitions

Central Valley Project (CVP): The United States, acting through the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), has constructed and is operating the Central Valley Project, California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of water of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries.

Class 1 Water: The supply of water stored in or flowing through Millerton Lake which, subject to the contingencies described in the water service or repayment contracts will be available for delivery from Millerton Lake and the Friant-Kern and Madera Canals as a dependable water supply during each Contract Year.

Class 2 Water: The supply of water which can be made available subject to the contingencies described in the water service or repayment contracts for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available as determined by the Contracting Officer.

CVP Water: All water that is developed, diverted, stored, or delivered by the Secretary of the Interior in accordance with the statutes authorizing the CVP and in accordance with the terms and conditions of water rights acquired pursuant to California Law.

Friant Division: The main features of this division are: Friant Dam, Millerton Lake, Friant-Kern Canal, and Madera Canal, all constructed and owned by the Reclamation.

Friant Division Long-Term Contractor Service Area: The area to which a Friant Division Long-Term Contractor is permitted to provide CVP Water under its contract.

Friant Division Long-Term Contractors or Friant Contractors: All public agencies that have executed long-term water service or repayment contracts with the United States Department of the Interior, Reclamation for water service from the Friant Division of the CVP.

Recapture: Actions taken to divert Restoration Flows from the San Joaquin River or the Sacramento-San Joaquin River Delta (Delta), pursuant to the Stipulation of Settlement in *NRDC et. al., v. Rogers et. al.,* 2006, for the benefit of Friant Division long-term contractors in a manner consistent with provisions stipulated in Paragraph 16 of said settlement.

Recirculation Water: Water made available to Friant Division long-term contractors from recaptured Restoration Flows. These supplies are to be developed according to the provisions of Paragraph 16(a), which directs the Secretary of the Interior to develop and

implement a plan for recirculation, recapture, reuse, exchange, or transfer of Restoration Flows for the purpose of reducing or avoiding water supply impacts resulting from implementation of the Restoration Goal.

Water Contract Year: Water Year shall mean the period from and including March 1 of each calendar year through the last day of February of the following calendar year.

1.0 Introduction

This Environmental Assessment (EA) analyzes the affected environment and environmental effects of recapturing San Joaquin River Restoration Flows (Restoration Flows) at Patterson Irrigation District (PID) and/or Banta-Carbona Irrigation District (BCID) to the Central Valley Project (CVP) for Water Contract Year (WCY) 2016.

This EA analyzes only the recapture of Restoration Flows. This EA does not cover the recirculation of this recaptured water within CVP facilities, SWP, and private facilities (e.g., San Luis Reservoir) to the Friant Contractors, as this is covered in the *Recirculation of Recaptured Water Year 2013-2017 San Joaquin River Restoration Program Flows Environmental Assessment, April 2013* (Recirculation EA). The Recirculation EA analyzed the potential environmental impacts of recirculating recaptured Interim and Restoration Flows for a five-year period utilizing existing conveyance facilities and without the addition of new facilities to recapture or recirculate released Restoration Flows from Friant Dam. The Finding of No Significant Impact was released for the Recirculation EA in April 2013.

This section describes the background of the San Joaquin River Restoration Program (SJRRP) and facilities used for recapturing Restoration Flows.

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 CVP Friant Division (Friant Division). After more than 18 years of litigation, *NRDC, et al., v. Kirk Rodgers, et al.* (Settlement), a settlement was reached. On September 31, 2006, the Settling Parties, including NRDC, Friant Water Users Authority (now represented by the Friant Water Authority), 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 on October 23, 2006. The Settlement establishes two primary goals:

- **Restoration Goal** – To restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.

- **Water Management Goal** – To reduce or avoid adverse water supply impacts on all of the Friant Contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

The planning and environmental review necessary to implement the Settlement is authorized under Section 3406(c)(1) of the Central Valley Project Improvement Act (Public Law 102-575) and the San Joaquin River Restoration Settlement Act (Act), included in Public Law 111-11, the Omnibus Public Land Management Act of 2009. The Secretary of the Interior is authorized and directed to implement the terms and conditions of the Settlement through the Act. The SJRRP is implementing the Settlement. The Settlement identifies the need for a plan for recirculation, recapture, reuse, exchange or transfer of Restoration flows to reduce or avoid impacts to Friant Contractors. There is currently an interim plan in place, and a long term plan is being developed.

This is a one-year action to reduce or avoid impacts to Friant Contractors while the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) is preparing the Long-term Recapture and Recirculation of Restoration Flows Environmental Impact Statement (EIS) for the SJRRP. In July 2015 Reclamation published a Notice of Intent to prepare an EIS to identify a set of alternatives for the recapture and recirculation of Restoration Flows to long-term contractors of the Friant Division of the CVP.

1.2 Recapture Facilities

This section describes the PID and BCID facilities to be used to recapture Restoration Flows in the lower San Joaquin River. For additional information on conveyance facilities see the section titled “Water Resources” in Chapter 3, “Affected Environment and Environmental Consequences.”

1.2.1 Patterson Irrigation District

PID is located near the City of Patterson, in Stanislaus County, California along the San Joaquin River downstream from the Merced River (Figures 1-1 and 1-2). PID’s San Joaquin River diversion facility consists of seven pumps with a total diversion capacity of approximately 195 cubic feet per second (cfs). The diversion facility was rehabilitated and a fish screen facility was constructed in 2011. The river diversion delivery system is automated for demand control on PID’s main canal. PID currently operates their diversion pump system through an Allen-Bradley IntelliCENTER control system and through a Supervisory Control and Data Acquisition System (ESA 2006).

PID’s distribution system includes approximately four miles of main canal system connecting the San Joaquin River diversion facility to the Delta-Mendota Canal (DMC), and approximately 52 miles of lateral delivery canals. PID’s distribution system includes a 40 cfs connection to the DMC.

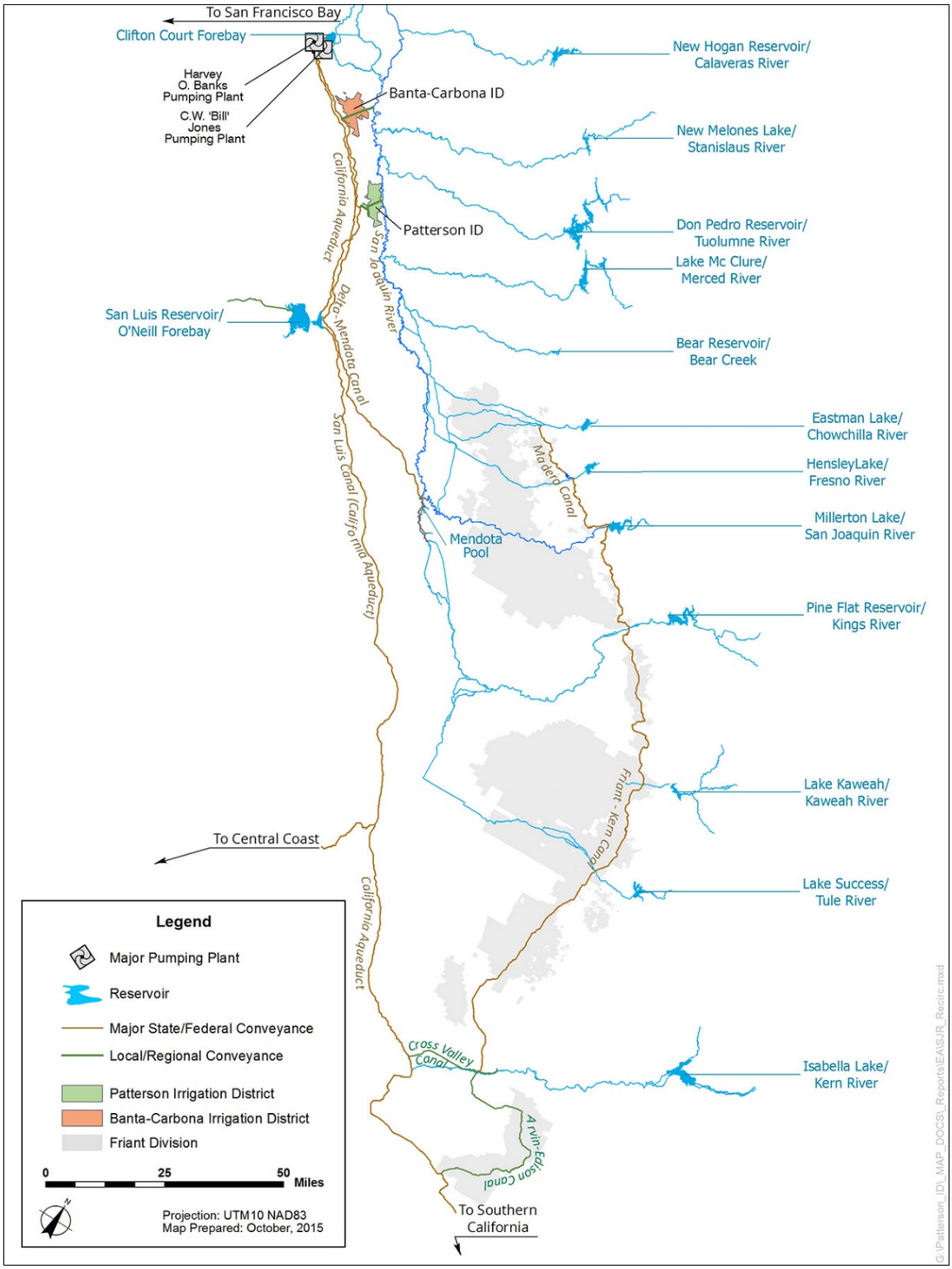

Figure 1-1.
Vicinity Map

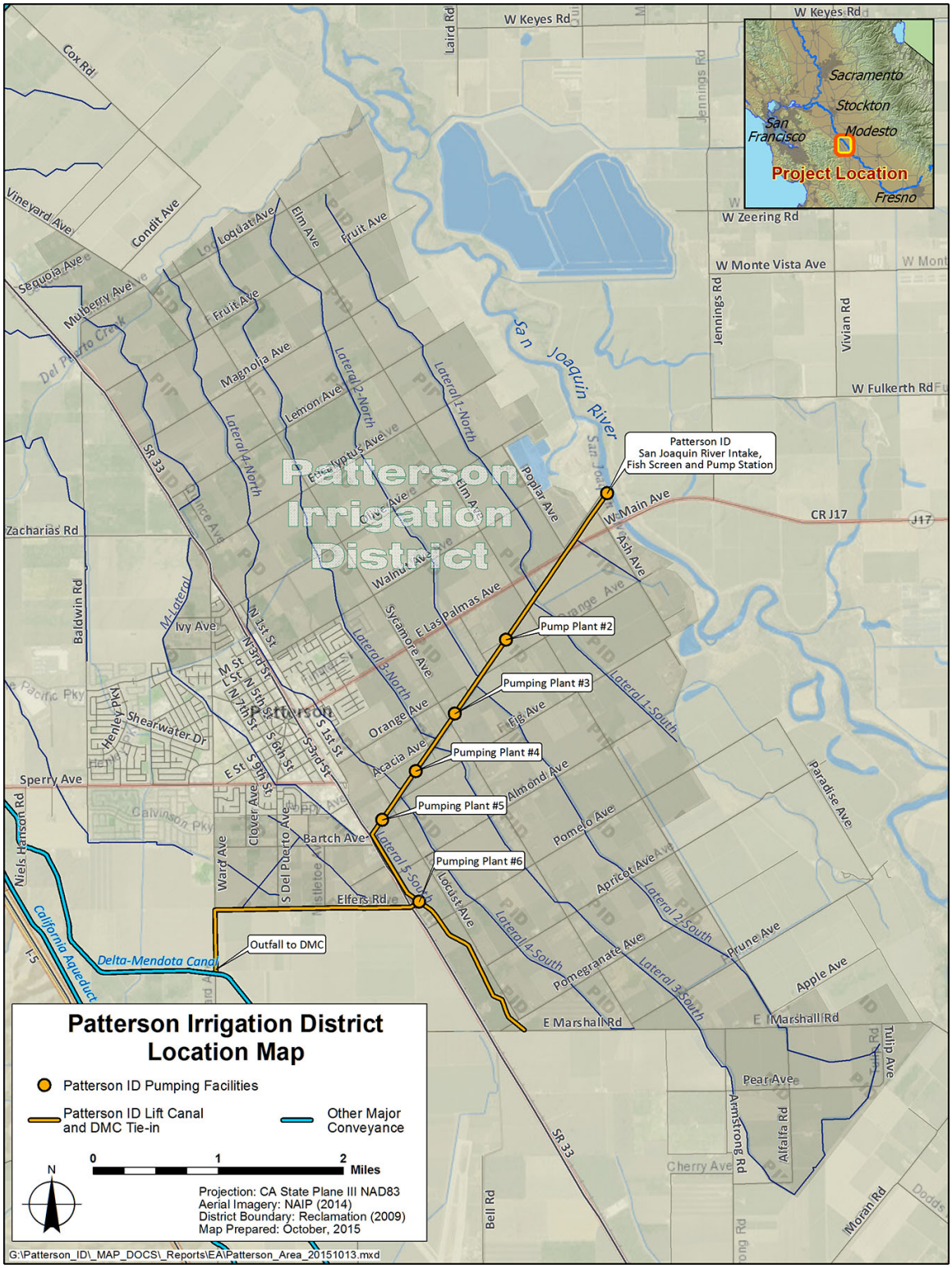

Figure 1-2.
Patterson Irrigation District

1.2.2 Banta-Carbona Irrigation District

BCID is located near the City of Tracy in San Joaquin County, California and is downstream from the San Joaquin River and Stanislaus River confluence (Figures 1-1 and 1-3). BCID's San Joaquin River diversion is a gravity channel with a fish screen facility with a 250 cfs capacity.

BCID's distribution system includes approximately 6 miles of main canal system and 1 mile of pipeline connecting the San Joaquin River diversion facility to the DMC, and approximately 27 miles of lateral delivery canals. CVP water from the DMC is gravity-fed through two turnouts and a pipeline connected to the BCID Main Lift Canal. BCID's distribution system includes a 65 cfs connection to the DMC.

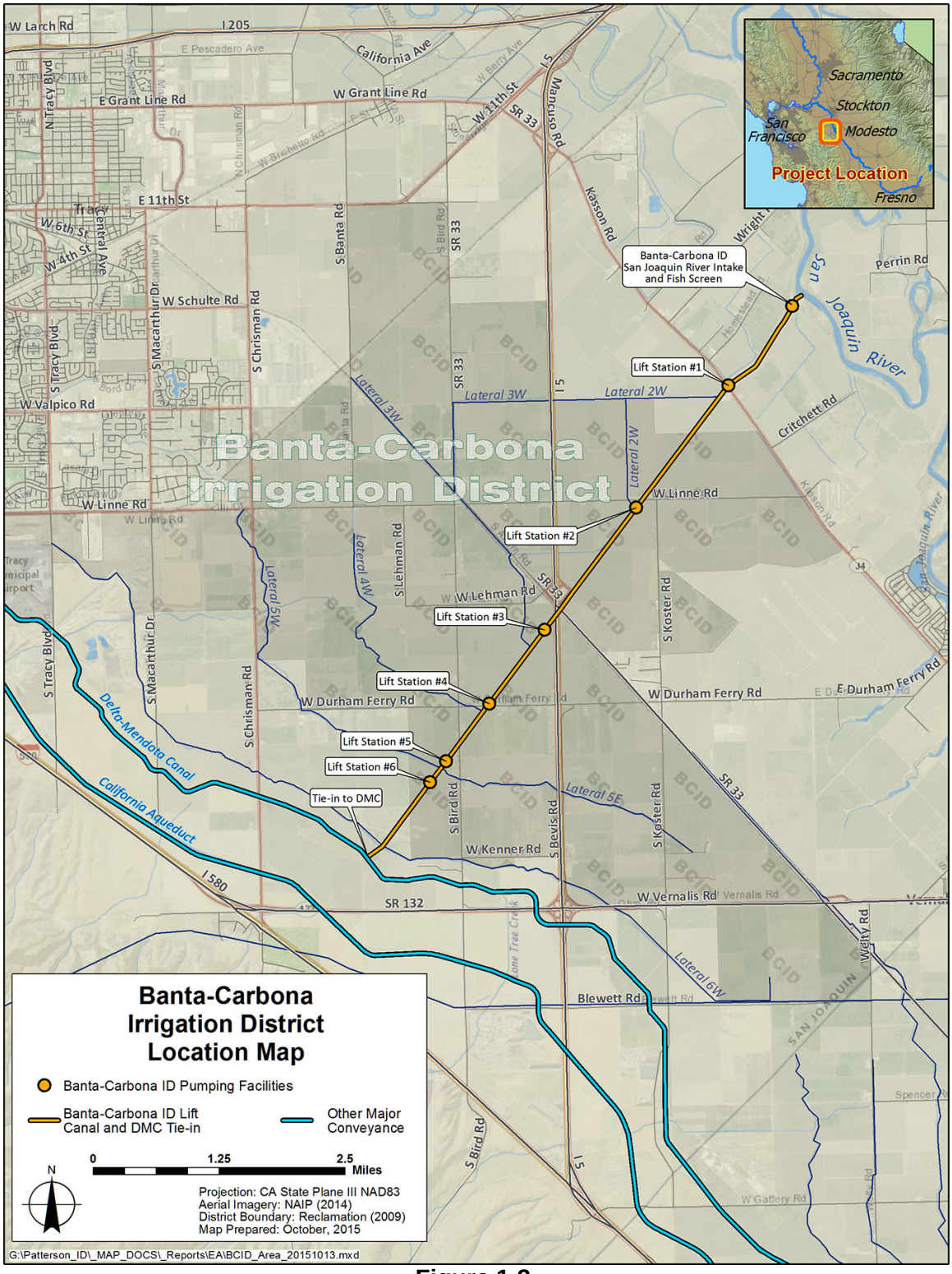

Figure 1-3.
Banta-Carbona Irrigation District

1.3 Incorporation of Related Environmental Documents

This EA incorporates the affected environment and environmental analysis in the SJRRP Program Environmental Impact Statement/Environmental Impact Report (PEIS/R). The PEIS/R was finalized in July 2012 and the corresponding Record of Decision (ROD) was issued on September 28, 2012 (Reclamation 2012a and 2012b). The PEIS/R and ROD analyzed at a project-level the reoperation of Friant Dam to release Interim and Restoration Flows to the San Joaquin River, making water supplies available to Friant Division long-term contractors at a pre-established rate, and the recapture of Interim and Restoration Flows at existing facilities within the Restoration Area (defined as the San Joaquin River between Friant Dam and the Merced River) and in the Sacramento-San Joaquin River Delta (Delta). The PEIS/R and ROD also include program-level actions, which were analyzed at the level of detail available, but may require the completion of additional environmental analysis, as appropriate as planning and design efforts progress. Some of the program-level actions identified in the PEIS/R include the recapture of Restoration Flows at existing facilities on the San Joaquin River downstream from the Merced River.

This EA incorporates by reference the following information from the PEIS/R:

- **Chapter 3.0 - Considerations for Describing the Affected Environment and Environmental Consequences** – This EA incorporates the analysis and assumptions presented in the chapter, specifically, analysis of the Study Area for the PEIS/R, the explanation of significance criteria, impact comparisons, impact levels, and mitigation measures are incorporated into the contents of this EA.

- **Chapter 4.0 – Air Quality** – This EA incorporates the analysis performed to assess impacts related to program-level actions, which would include stationary sources associated with the recapture of water. The assessment of impacts and ultimate determinations, all being less than significant for the operation of the SJRRP, are also incorporated.

- **Chapter 5.0 – Biological Resources – Fisheries** – This EA incorporates the analysis performed to support the analysis for the SJRRP. The incorporated material from the PEIS/R includes the quantitative and qualitative assessments of aquatic species impacts as a result of the implementation of the SJRRP, specifically related to physical processes such as water temperatures, water quality, flow patterns, fish habitat conditions, pollutant discharge and mobilization, turbidity, diversions and entrainment, predation, and food web support in the Delta. The assessment of impacts and determinations are also incorporated.

- **Chapter 6.0 – Biological Resources – Vegetation and Wildlife** – This EA incorporates the analysis performed in the PEIS/R related to the assessment of sensitive species and habitats in or near the project area, including the CVP/ State Water Project (SWP) water service areas. The incorporated material includes the investigation of the impacts of the SJRRP on the alteration of riparian habitat,

changes in invasive plant abundance and distribution, or alteration of special-status plant species or habitats between the Merced River and the Delta or in the Delta.

- **Chapter 7.0 – Climate Change and Greenhouse Gas Emissions** – This EA incorporates by reference the discussion of potential changes related to the implementation of the SJRRP. National Environmental Policy Act (NEPA) and California Environmental Quality Act standards related to climate change analysis varies greatly and the PEIS/R analysis incorporates the more stringent State of California measures to analyze and model greenhouse gas (GHG) emissions. For project- level actions analyzed in the PEIS/R, it was found that there would be potentially significant and unavoidable impacts related to increased flow releases, which in turn could cause additional traffic from recreational visitors driving to the San Joaquin River and also by increased groundwater pumping and changes in the CVP/SWP energy generation and consumption. This is related to a long-term impact of the SJRRP's flow releases, which could result in an increased use of groundwater pumps due to changes in surface water availability. While 80-90 percent of groundwater pumps in the Friant Division are electric, the remaining additional diesel-powered pumping could result in increased GHG emissions. The impacts on GHG emissions from project-level implementation of operations and the discussion of recapture of flows through the existing facilities in the Restoration Area and the Delta are also incorporated by reference into from the PEIS/R into this document.

- **Chapter 12.0 – Hydrology – Groundwater** – The entirety of the PEIS/R chapter is incorporated into this EA. The chapter describes current and historical conditions and explains the aquifer regions surrounding the San Joaquin River, many of which suffer from groundwater overdraft, land subsidence, and water quality concerns. This EA also incorporates the discussion related to changes and impacts associated with implementation of the SJRRP in relation to changes in groundwater levels and quality in the CVP/SWP water service areas. Generally, both groundwater levels and groundwater quality impacts are anticipated to be potentially significant and unavoidable in association with the reduction of water supply to the Friant Division long-term contractors. This EA addresses a temporary one year action that may contribute to abating additional groundwater pumping within the Friant Division. The action alternatives in this EA would work to limit or reduce land subsidence that is addressed in the PEIS/R.

- **Chapter 13.0 – Hydrology – Surface Water Supplies and Facilities Operations** – This EA incorporates by reference the entirety of this PEIS/R chapter. This chapter outlines operations for water deliveries, storage, and other relevant information related to the CVP and SWP and impacts from implementation of the SJRRP. The chapter defines impacts related to Delta operations and their interrelation to the SJRRP at a project level of analysis.

- **Chapter 14.0 – Hydrology – Surface Water Quality** – This EA incorporates by reference the entirety of this PEIS/R chapter. This chapter describes the

environmental setting and environmental consequences of implementing the SJRRP. Of particular relevance to this EA is the analysis performed in this chapter related to impacts on water quality in the CVP/SWP water service areas and in the San Joaquin River from the Merced River to the Delta. All impacts for these factors associated with the implementation of the SJRRP were determined to be less than significant or less than significant and beneficial.

- **Chapter 16.0 – Land Use Planning and Agricultural Resources** – This EA incorporates by reference the analysis performed to support the findings in Impact LUP- 8: Substantial Diminishment of Agricultural Land Resource Quality and Importance Because of Altered Water Deliveries. As described in this EA in the chapter on land use, no long-term changes are anticipated as a result of this temporary one year action.

- **Chapter 26.0 – Cumulative Impacts** – This EA incorporates by reference the discussion of the effects of the SJRRP in relation to past, present, and reasonably foreseeable future actions, specifically in the CVP/SWP water service area. This includes discussion of planned actions associated with the collective CALFED Water Resources Projects, other water resource projects, resource management plans and programs, and the related impact analysis from the SJRRP on cumulative air quality, fisheries, vegetation and wildlife, groundwater, surface water supplies and facilities operations, surface water quality, and land use planning.

The PEIS/R addresses the potential recapture of Restoration Flows at several diversion locations, including existing facilities at the PID facility between the Tuolumne and Merced River confluences and BCID facility downstream from the Stanislaus confluence. Recapture is subject to availability of Restoration Flows and the available capacity of the districts' facilities within the CVP and/or the SWP storage and conveyance facilities, including the California Aqueduct, DMC, San Luis Reservoir, and related pumping facilities. Available capacity is capacity that is available after all statutory and contractual obligations are satisfied to existing water service or supply contracts, exchange contracts, settlement contracts, transfers, or other agreements involving or intended to benefit CVP/SWP contractors served through CVP/SWP facilities.

1.4 Relation of Action Alternatives to Settlement

The Water Management Goal of the Settlement and Act includes a requirement for the development and implementation of a plan for recirculation, recapture, reuse, exchange or transfer of Restoration Flows for the purpose of reducing or avoiding impacts to water deliveries to all of the participating Friant Contractors. Paragraph 16 of the Settlement states:

> *16. In order to achieve the Water Management Goal, immediately upon the Effective Date of this Settlement, the Secretary, in consultation with the Plaintiffs and Friant Parties, shall commence*

activities pursuant to applicable law and provisions of this Settlement to develop and implement the following:

(a) A plan for recirculation, recapture, reuse, exchange or transfer of the Interim Flows and Restoration Flows for the purpose of reducing or avoiding impacts to water deliveries to all of the Friant Contractors caused by the Interim Flows and Restoration Flows. The plan shall include provisions for funding necessary measures to implement the plan. The plan shall:

(1) ensure that any recirculation, recapture, reuse, exchange or transfer of the Interim Flows and Restoration Flows shall have no adverse impact on the Restoration Goal, downstream water quality or fisheries;

(2) be developed and implemented in accordance with all applicable laws, regulations and standards. The Parties agree that this Paragraph 16 shall not be relied upon in connection with any request or proceeding relating to any increase in Delta pumping rates or capacity beyond current criteria existing as of the Effective Date of this Settlement;

(3) be developed and implemented in a manner that does not adversely impact the Secretary's ability to meet contractual obligations existing as of the Effective Date of this Settlement; and

(4) the plan shall not be inconsistent with agreements between the United States Bureau of Reclamation and the California Department of Water Resources existing on the Effective Date of this Settlement, with regard to operation of the CVP and State Water Project.

This EA analyzes the environmental effects of recapture of Restoration Flows at PID and/or BCID.

1.5 Purpose and Need

The purpose of the proposed alternatives in this EA are to implement the provisions of the Settlement pertaining to the Water Management Goal by providing mechanisms to ensure that recapture of Restoration Flows occurs on the lower San Joaquin River at existing facilities at PID and/or BCID. The action is needed to avoid or reduce potential water supply impacts to Friant Contractors from implementation of the SJRRP, in accordance with the Settlement.

2.0 Alternatives

2.1 No Action Alternative

Under the no action alternative, Reclamation would not facilitate recapture of Restoration Flows at PID or BCID for the purpose of contributing to meeting the Water Management Goal in WCY 2016. Reclamation would only attempt to recapture Restoration Flows in the Delta and in the Restoration Area (at Mendota Pool). The volume of Restoration Flows recaptured would likely be less than recaptured in combination with PID and/or BCID facilities, thus decreasing the effectiveness of the recapture and recirculation actions and the ability to return water to the Friant Contractors and would therefore be less effective in meeting the Water Management Goal and terms of the Settlement and Act. PID and BCID will continue to operate their facilities according to existing water rights and under existing biological opinions.

The no action alterative represents the NEPA baseline, against which the impacts of the action alternatives (identified below) are compared.

2.2 Action Alternatives

This EA evaluates three proposed alternatives for recapture of Restoration Flows at the following locations: (1) PID, (2) BCID, or (3) PID and BCID, limited by the anticipated availability of Restoration Flows and the indicated maximum capability for instantaneous recapture of those flows (BCID [65 cfs] and PID [40 cfs]). Restoration Flows that are not recaptured at PID or BCID would be available for recapture either in the Restoration Area or in the Delta.

Diversions at PID and BCID may be limited by several factors that can reduce the total daily recapture of Restoration Flows from the San Joaquin River for delivery to the DMC. Constraints include the availability and pattern of Restoration Flow releases from Friant Dam, allowable diversions (e.g., holding contracts) and losses between Friant Dam and PID or BCID, and the ability of PID and BCID to make capacity available for use in recapturing Restoration Flows. Many of these factors are subject to considerable uncertainty, and could limit the ability to recapture Restoration Flows at any time.

The diversion capacities identified in the alternatives represent the anticipated constraints based on: the capacities of the fish screens and pumping facilities in the San Joaquin River; conveyance capacities between the screened facilities and the DMC; and, the prioritization of these facilities for meeting in-district water uses before being made available for recapture of Restoration Flows. This would limit the diversion of Restoration Flows in the San Joaquin River to the rates of flow that could be instantaneously passed through each district for delivery into the DMC. Although both districts may have the physical capacity to capture more and exchange their CVP supplies

in the DMC for recaptured Restoration Flows from the San Joaquin River, the alternatives in this EA would not include such operations. Because these physical capacity constraints do not consider other limitations, such as the availability of Restoration Flows, the associated monthly and annual pumping volumes for each action alternative, as discussed below, are unlikely to be met in full. However, these pumping volumes represent the upper bound for diversions during each month in the year, and thereby represent the upper bound of potential environmental effects associated with the recapture of Restoration Flows at PID and BCID.

In addition to achieving the project purpose and underlying need as described in Section 1, the action alternatives would provide valuable information about using existing San Joaquin River diversion facilities to recapture Restoration Flows.

The action alternatives will be subject to the following parameters:

- No native or untilled land (fallow for three consecutive years or more) will be cultivated with the water involved in this action.
- The ultimate purpose of water use will be agricultural, municipal, and/or groundwater recharge.
- The recapture of Restoration Flows will be limited to existing supply and will not increase overall consumptive use.
- The recapture of Restoration Flows will not lead to any land conversion.
- The recapture of Restoration Flows will comply with all applicable Federal, State, Local or Tribal laws or requirements imposed for the protection of the environment and ITAs.
- The recapture of Restoration Flows will not alter the flow regime of streams, creeks, ponds, pools, wetlands, etc.

The action alternatives do not include construction or modification of facilities.

2.2.1 Alternative A – Recapture at Patterson Irrigation District

Under Alternative A, Reclamation would enter into a one-year agreement with PID for the recapture of up to 28,979 AF of Restoration Flows. This temporary action would begin on February 1, 2016, and would continue for a period of up to one year. Reclamation would seek appropriate California State Water Resources Control Board approval for the temporary diversion of Restoration Flows from the San Joaquin River at PID's screened diversion facility on the San Joaquin River. There would be no expansion of use of PID's existing water rights or operations beyond existing biological opinions. The areas defined within this action are currently within the CVP place-of-use. PID would divert Restoration Flows from the San Joaquin River using their existing screened diversion facility, subject to the availability of capacity in PID's system.

These diverted Restoration Flows would be conveyed through PID facilities to the DMC at the expense of Reclamation and/or Friant Contractors. Restoration Flows diverted into the DMC would then be conveyed through the DMC to the San Luis Unit facilities for recirculation to the Friant Contractors. As mentioned previously, the recirculation of the Restoration Flows was analyzed in the Recirculation EA and is not evaluated in this EA.

The maximum potential for recapture of Restoration Flows under Alternative A is summarized in Table 2-1. PID would implement the recapture and conveyance of Restoration Flows only to the extent that doing so would not reduce the ability of PID to meet the water demands of its growers or increase PID's cost of water service consistent with PID's ability and costs to meet those demands. The instantaneous diversion rate of Restoration Flows is limited by the 40 cfs pumping capacity up to the DMC, since PID has no appreciable storage within the district. Pumping from the San Joaquin River in excess of the 40 cfs limit would be to satisfy PID's agricultural demands and governed by PID's existing water rights, as represented by the baseline condition.

Table 2-1.
Maximum Monthly PID Restoration Flow Recapture Potential

Month	Maximum Potential Diversion and Delivery into the DMC (acre-feet)
January	2,460
February	2,241
March	2,460
April	2,380
May	2,460
June	2,380
July	2,460
August	2,460
September	2,380
October	2,460
November	2,380
December	2,460
Total	**28,979**

Note:
Does not consider available DMC capacity, or the availability of Restoration Flows at PID's diversion facility at any point in time nor any downtime/maintenance or PID capacity constraints. Volumes based on the continuous use of PID's proposed 40 cubic feet per second instantaneous pumping capacity limitation.

Key:
DMC = Delta-Mendota Canal
PID = Patterson Irrigation District

2.2.2 Alternative B – Recapture at Banta-Carbona Irrigation District

Under Alternative B, Reclamation would enter into a one-year agreement with BCID for the recapture of up to 47,090 AF of Restoration Flows. This temporary action would begin on February 1, 2016, and would continue for a period of up to one year. Reclamation would seek appropriate California State Water Resources Control Board approval for the temporary diversion of Restoration Flows from the San Joaquin River at BCID's screened diversion facility on the San Joaquin River, and include the diversion in the Delta exports calculation described in the California State Water Resources Control Board Water Right Decision 1641. The areas defined within this action are currently

within the CVP place-of-use. There would be no expansion of use of BCID's existing water rights or operations beyond existing biological opinions.

Similar to the PID recapture, BCID would divert Restoration Flows from the San Joaquin River using their existing screened diversion facility, subject to the availability of capacity in BCID's system. These diverted Restoration Flows would be conveyed through BCID's facilities to the DMC at the expense of Reclamation and/or Friant Contractors. Restoration Flows diverted into the DMC would then be conveyed through the DMC to the San Luis Unit facilities for recirculation to the Friant Contractors. As mentioned previously, the recirculation of the Restoration Flows was analyzed in the Recirculation EA and is not evaluated in this EA.

The potential for recapture of Restoration Flows under Alternative B is summarized in Table 2-2. BCID would implement the recapture and conveyance of Restoration Flows only to the extent that doing so would not reduce the ability of BCID to meet the water demands of its growers or increase BCID's cost of water service consistent with BCID's ability and costs to meet those demands. The diversion rate of Restoration Flows is limited by the instantaneous 65 cfs pumping capacity up to the DMC, since BCID has no appreciable storage within the district. Pumping from the San Joaquin River in excess of the 65 cfs limit would be to satisfy BCID's agricultural demands and would be governed by BCID's existing water rights, as represented by the baseline condition.

Table 2-2.
Maximum Monthly BCID Restoration Flow Recapture Potential

Month	Maximum Potential Diversion and Delivery into the DMC (acre-feet)
January	3,997
February	3,642
March	3,997
April	3,868
May	3,997
June	3,868
July	3,997
August	3,997
September	3,868
October	3,997
November	3,868
December	3,997
Total	**47,090**

Note:
Does not consider available DMC capacity, or the availability of Restoration Flows at BCID's diversion facility at any point in time nor any downtime/maintenance or BCID capacity constraints. Volumes based on the continuous use of BCID's proposed 65 cubic feet per second instantaneous pumping capacity limitation.

Key:
BCID = Banta-Carbona Irrigation District
DMC = Delta-Mendota Canal

2.2.3 Alternative C – Recapture at Patterson Irrigation District and Banta-Carbona Irrigation District

Under Alternative C, Reclamation would enter into a one-year agreement with PID and BCID for the recapture of up to 76,069 AF of Restoration Flows. As with the previously

described action alternatives, this temporary action would begin on February 1, 2016, and would continue for a period of up to one year. Reclamation would seek appropriate California State Water Resources Control Board approval for the temporary diversion of Restoration Flows from the San Joaquin River at PID and BCID's screened diversion facilities on the San Joaquin River, and include the diversion at BCID in the Delta exports calculation described in the California State Water Resources Control Board Water Right Decision 1641. The areas defined within this action are currently within the CVP place-of-use.

Alternative C would operate as an aggregate of Alternative A and Alternative B. Alternative C would use the same diversions and conveyances as the previously described alternatives. There would be no expansion of use of PID and BCID's existing water rights.

The potential for recapture of Restoration Flows under Alternative C is summarized in Table 2-3. PID and BCID would implement the recapture and conveyance of Restoration Flows only to the extent that doing so would not reduce their ability to meet the water demands of their growers or increase their cost of water service consistent with their ability and costs to meet those demands. The diversion rate of Restoration Flows is limited by the PID's 40 cfs and BCID's 65 cfs instantaneous pumping capacity up to the DMC, since PID and BCID have no appreciable storage within the districts. Pumping from the San Joaquin River in excess of the instantaneous 105 cfs limit would be to satisfy PID and BCID's agricultural demands and would be governed by PID and BCID's existing water rights, which are represented by the baseline condition.

Table 2-3.
Maximum Monthly PID and BCID Restoration Flow Recapture Potential

Month	Maximum Potential Diversion and Delivery into the DMC (acre-feet)
January	6,456
February	5,883
March	6,456
April	6,248
May	6,456
June	6,248
July	6,456
August	6,456
September	6,248
October	6,456
November	6,248
December	6,456
Total	**76,069**

Note:
Does not consider available DMC capacity, or the availability of Restoration Flows at PID and BCID's diversion facility at any point in time nor any downtime/maintenance or PID and BCID capacity constraints. Volumes based on the continuous use of PID and BCID's proposed 105 cubic feet per second instantaneous pumping capacity limitation.

Key:
BCID = Banta-Carbona Irrigation District
DMC = Delta-Mendota Canal
PID = Patterson Irrigation District

This page left blank intentionally.

3.0 Affected Environment and Environmental Consequences

This section provides an overview of the physical environment and existing conditions that could be affected by the alternatives consistent with NEPA guidelines. Each resource discussion in this section evaluates the potential impacts of the No Action Alternative and the proposed action alternatives. The affected environment condition assumptions consist of the existing physical environmental conditions as of October 2015. Therefore, the affected environment includes the existing releases and recapture of Restoration Flows on the San Joaquin River between Friant Dam and the confluence of the Merced River.

As stated above, this EA does not cover the recirculation of water recaptured at PID and/or BCID, as this is covered in the Recirculation EA. The Recirculation EA analyzes the potential environmental impacts of recirculating recaptured Interim and Restoration Flows for a five-year period utilizing existing conveyance facilities and without the addition of new facilities to recapture or recirculate released SJRRP Flows from Friant Dam.

This EA discusses the affected environment on both a large regional scale as well as at a smaller district level, as appropriate. Water resources (groundwater, regional hydrology, etc.) are addressed at the regional scale and at the district level for district specific facilities.

The action alternatives would have no impact on the following resource categories, and therefore they are not further analyzed in this EA.

- **Air Quality** – The action alternatives would not include any construction activities and would be utilizing existing pumps, therefore would not result in a substantial increase in long-term regional or local emissions. Emissions from the action alternatives would not be anticipated to violate air quality standards, contribute substantially to an existing or projected air quality violation, or conflict with or obstruct implementation of Air Resources Board and San Joaquin Valley Air Pollution Control District air planning efforts.

- **Biological Resources** –Reclamation obtained a list of sensitive biological communities in the PID and BCID areas from the California Natural Diversity Database (CNDDB) on October 13, 2015 (Attachment A), and a list of species listed as threatened or endangered under the Federal Endangered Species Act (ESA) potentially occurring in the project area from the U.S. Fish and Wildlife Service (USFWS) on October 13, 2015 (Attachment B). Because there would be no land disturbance or land use changes associated with the action alternatives, and any potential water transfer would occur within the bounds of the previously referenced existing biological opinions and environmental analyses, there would

be no effect to vegetation and wildlife including ESA listed species, critical habitats, or species protected by the MBTA. The action alternatives would not have any long term impacts to water supply or water quality, therefore it can be assumed that anadromous and Delta fish species, and their designated critical habitat, would not be affected by the action alternatives.

- **Climate Change and Greenhouse Gas** – The action alternatives are one-year actions and would not result in a substantial increase in long-term regional or local emissions. The action would not add to the global inventory of gases that would contribute to global climate change and would not result in increases in GHG emissions. Additionally, the action alternatives would be temporary and occur over one year, and thus would not be affected by long term effects of climate change.

- **Cultural Resources** – The action alternatives would be undertakings as defined in Section 301(7) of the National Historic Preservation Act (NHPA) and subject to Section 106 review. The actions as described above would not modify existing facilities, and would not have the potential to cause effect to historic properties if they are present. The recapture of water as described would occur through existing facilities or within current water service area boundaries, without modification to existing facilities, construction of new facilities, or change in land use, thus the recapture of the Restoration Flows has no potential to cause effects on historic properties pursuant to 36 CFR Part 800.3(a)(1).

- **Indian Trust Assets** – There are no known Indian Trust Assets (ITA) within the PID or BCID service area boundaries and the proposed action alternatives would have no impacts to ITAs.

- **Land Use and Agricultural Resources** – The action alternatives would not result in any land conversion, and no land fallowing or habitat restoration would be deferred as a result of the recapture of only one year of recaptured Restoration Flows. No new lands would be brought into agricultural production as a result of the actions. Existing land use is agricultural and this is not expected to change as a result of the implementation of alternatives. The alternatives would not provide a long-term or reliable supply to support long-term land use changes.

3.1 Resources of Potential Concern

3.2 Water Resources

3.2.1 Affected Environment

This section discusses the affected environment for the following water resources: hydrology – groundwater, hydrology - surface water supplies and facilities operations, and hydrology – water quality.

Hydrology – Groundwater

San Joaquin River Hydrologic Region The San Joaquin River Hydrologic Region covers approximately 9.7 million acres and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties. The region is heavily reliant on groundwater. Change in groundwater elevations between spring 2005 and spring 2010 show that most areas in the San Joaquin Valley have exhibited groundwater elevation declines; however, some areas in the southern part of the region have experienced groundwater-level declines in excess of 60 feet. Groundwater elevations, according to available spring 2010 data, show cones of groundwater depression as much as 50 feet below mean sea level in the northern portion of the San Joaquin Valley (DWR 2015).

Tulare Lake Hydrologic Region The Tulare Lake Hydrologic Region covers approximately 10.9 million acres and includes all of Kings and Tulare counties and most of Fresno and Kern counties. The extensive use of groundwater has historically caused subsidence of the land surface along the west and south end of the San Joaquin Valley. Depth to groundwater and groundwater elevation contours using spring 2010 data show that many parts of the southern San Joaquin Valley groundwater levels were at depths exceeding 650 feet below ground surface. Additionally, the change in groundwater elevations between spring 2005 and spring 2010 show that many areas of the southern San Joaquin Valley experienced groundwater elevation declines in excess of 60 feet (DWR 2015).

Hydrology – Surface Water Quality

San Joaquin River Flow and water quality standards on the San Joaquin River are set by the State Water Resources Control Board Water Right Decision 1641 (D-1641) and Reasonable and Prudent alternatives from the 2008 NMFS Biological Opinion. These standards specify flow conditions that must be met between the months of February and June, with a pulse in October. Water quality in various segments of the San Joaquin River below Friant Dam to the Merced River confluence is degraded because of low flow and discharges from agricultural and wildlife areas. Below its confluence with the Merced River, San Joaquin River water quality generally improves at successive confluences with east side rivers draining the Sierra Nevada, particularly at confluences with the Merced, Tuolumne, and Stanislaus rivers. In the relatively long reach between the Merced and Tuolumne rivers, mineral concentrations tend to increase because of inflows of agricultural drainage water, other wastewaters, and poor quality groundwater accretion.

As stated in the PEIS/R, the release of Restoration Flows will improve the success of meeting these flow standards. The water quality benefits from the Restoration Flows result from the dilution effects from freshwater inflow from the upper San Joaquin River to the lower San Joaquin River. As described in the PEIS/R, potential surface water quality effects within the San Joaquin River from the Merced River to the Delta, including effects from the recapture of Restoration Flows, would not trigger violations of existing water quality standards or substantial water quality changes that would adversely affect beneficial uses, or have substantive impacts on public health.

Sacramento-San Joaquin Delta Water quality in the Delta is highly variable temporally (timing) and spatially (location) and is a function of complex circulation patterns that are affected by inflows, pumping and drainage for Delta agricultural operations and exports, operation of flow control structures, and tidal action. The existing water quality problems of the Delta system may be categorized as presence of toxic materials, eutrophication and associated fluctuations in dissolved oxygen, presence of suspended sediments and turbidity, salinity, and presence of pathogenic bacteria (SWRCB 1999). The north Delta tends to have better water quality primarily because of inflow from the Sacramento River. The quality of water in the west Delta is strongly influenced by tidal exchange with San Francisco Bay; during low-flow periods, seawater intrusion results in increased salinity. In the south Delta, water quality tends to be poorer because of the combination of inflows of poorer water quality from the San Joaquin River, agricultural discharges from Delta islands, and effects of diversions that can sometimes increase seawater intrusion from San Francisco Bay.

Hydrology – Surface Water Supplies and Facilities Operations

Patterson Irrigation District PID holds a pre-1914 water right to divert water from the San Joaquin River, and diverts water at an existing facility under this right. Under the pre-1914 water right, PID has the authority and right under California law to divert the water it needs from the San Joaquin River, as long as it is put to beneficial use. As a result of a settlement reached between PID and Reclamation (Reclamation) for the construction of Friant Dam and partial obstruction of natural flow from the San Joaquin River, PID receives 6,000 AF per year of water, referred to as Replacement Water, from Reclamation via the DMC (Reclamation 2009). PID also has a contract with Reclamation for 16,500 AF per year of CVP water (agricultural entitlement). The district currently receives between 80 to 90 percent of its water supply from the San Joaquin River. The remaining supply comes from groundwater, recirculation projects, and the CVP.

PID's San Joaquin River diversion facility consists of seven pumps with a total diversion capacity of approximately 195 cubic feet per second (cfs). The diversion facility was rehabilitated and a fish screen facility constructed in 2011. The river diversion delivery system is automated for demand control on the Main Canal. PID currently operates their diversion pump system through an Allen-Bradley IntelliCENTER control system and through a Supervisory Control and Data Acquisition System (ESA 2006).

PID's distribution system includes approximately four miles of main canal system connecting the San Joaquin River diversion facility to the DMC, and approximately 52 miles of lateral delivery canals. The main canal lift system includes approximately four miles of concrete-lined open channel, and six pump stations capable of moving water into five separate canal lift segments (see Figure 1-2). The pump stations range in capacity from 195 cfs to 40 cfs, and include 35 electrically driven pumps ranging in size up to 350 horsepower. The main canal system is automated; each pump station operating on downstream level control to maintain water levels in each canal segment, limiting operational spills. PID's distribution system includes a 40 cfs connection to the DMC.

Banta-Carbona Irrigation District The primary water supply for Alternative B is the San Joaquin River, for which the district holds three rights to divert water at River Mile

63.5 (See Figure 1-3). BCID's pre-1914 water rights on the San Joaquin River have served as the district's primary source of water for over 100 years. The district also has a CVP contract of 20,000 AF annually and takes delivery of this water when available from the DMC.

The distribution system in BCID consists of 2.5 miles of unlined canal, 33.2 miles of concrete lined canal, and 46 miles of underground pipeline. CVP water from the DMC is gravity-fed through two turnouts and a pipeline connected to the BCID Main Lift Canal. A fish screen facility is located at BCID's diversion on the San Joaquin River to prevent entrainment of fish species into the diversion works. The target species used for the establishment of the design criteria of the screen facility are the Chinook salmon (up to 400 cfs) and the Delta smelt (up to 250 cfs). The fish screen facility consists of a vee-shaped screen located within the leveed canal close to the river and 18 panel screens installed vertically in a vee configuration with 9 panels to a side. Each panel is 6'-1" tall and 11'-6" wide. Fish pass the screens and are pumped through a Hidrostal fish pump to the fish return pipeline on the north levee. This pipeline returns fish back to the river downstream from the diversion point. The positive barrier fish screen is fully consistent with the fish screen criteria of the regulatory agencies including NMFS, California Department of Fish and Wildlife, and the USFWS.

Friant Division The Friant Division was authorized by Congress under the concept of conjunctive use, where CVP water was meant to be a supplemental supply to alleviate groundwater overdraft in the area. Based on the conjunctive use concept within the Friant Division, contractors are expected to continue mixed use of CVP and other surface water supplies and groundwater, with greater emphasis on groundwater use during dry periods when surface water is limited or expensive and percolate excess surface water in wet years. The Friant Division is an integral part of the CVP, and is integrated into the CVP to the extent that San Joaquin River water is used to fulfill the CVP's obligations at the Mendota Pool and in the San Joaquin River. Major facilities of the Friant Division include Friant Dam and Millerton Lake, the Friant-Kern Canal and the Madera Canal.

Sacramento-San Joaquin Delta The hydraulics of the Delta are complicated by tidal influences, a multitude of agricultural and municipal and industrial (M&I) diversions for use within the Delta itself, and by CVP and SWP operations and exports. Principal factors affecting Delta hydrodynamics are (1) river inflow and outflow from the Sacramento River and San Joaquin River systems, (2) daily tidal inflow and outflow through San Francisco Bay, and (3) export pumping from the south Delta, primarily through the Banks and Jones pumping plants. Inflow to the Delta comes from the Sacramento, San Joaquin, Mokelumne, Calaveras and Cosumnes rivers, and many smaller eastside tributaries.

In the south Delta, decreases in water levels due to CVP and SWP export pumping are a concern for local agricultural diverters because during periods of low-water levels, sufficient pump draft cannot be maintained, and irrigation can be interrupted.

Agreements exist between Reclamation and DWR regarding how the CVP and SWP will jointly operate to meet the goals and needs of the projects, and to meet shared

responsibilities for in-basin requirements and water quality requirements in the Delta. Both projects export water from the Delta for use in areas to the south. For example, the Coordinated Operation Agreement, signed in November 1986, contains joint operations rules that the CVP and SWP have agreed to follow to allow operations while meeting in-basin flow and/or water quality standards in Delta (Reclamation and DWR 1986).

CVP and SWP operations are also constrained by a number of flow and quality regulations throughout the Delta watershed. These regulations include restrictions to exports from the Delta and can be impacted by changes in Delta inflow.

Central Valley Project Long-Term Water Service Contracts In accordance with CVPIA Section 3404c, Reclamation is renegotiating long-term water service contracts. As many as 113 CVP water service contracts within the Central Valley of California may be renewed during this process. The action alternatives would be consistent with CVP long-term water service contracts.

San Joaquin River Restoration Program

Restoration Flows Table 3-1 presents the estimated portion of the WCY 2016 Restoration Flows that would reach the lower San Joaquin River (at PID and BCID) and/or in the Delta and that would be available for recapture. These flows account for diversions and losses between Friant Dam and Mendota Pool. In addition, these flows exclude periods of flood when Restoration Flows are not available for recapture. As a result, although Wet years have more flows, Wet years tend to align with floods and, therefore, there are less Restoration Flows available for recapture in Wet years than drier year types.

Additionally, there is a Restoration Flow capacity restriction in Reach 4 (between Mendota Pool and the Merced River confluence) of 350 cfs.

These flows are based on 2012 CalSim II water operations simulations, using Reclamation's 2012 CalSim II model (as used in the Upper San Joaquin River Basin Storage Investigation). CalSim II typically simulates system operations for an 82-year period using a monthly time step. The model assumes that facilities, land-use, water supply contracts, and regulatory requirements are constant over this period, representing a fixed level of development. The historical flow record of October 1921 to September 2003, adjusted for the influence of land-use change and upstream flow regulation, is used to represent the possible range of hydrologic conditions. Results from a single simulation may not necessarily correspond to actual system operations for a specific month or year, but are representative of general water supply conditions. Therefore, this CalSim II output is appropriate to represent the general water supply conditions for the analysis of this EA.

Table 3-1.
Average Monthly Restoration Flows Available for Recapture below the Merced River Confluence, by SJRRP Year Type

SJRRP Year Type	March (cfs)	April (cfs)	May (cfs)	June (cfs)	July (cfs)	August (cfs)	September (cfs)	October (cfs)	November (cfs)	December (cfs)	January (cfs)	February (cfs)
Wet	22	109	66	88	21	43	62	102	218	129	104	94
Normal-Wet	266	322	138	118	43	43	62	109	249	130	113	67
Normal-Dry	335	350	81	81	43	43	62	109	249	135	152	125
Dry	350	249	70	70	37	37	62	109	223	147	125	111
Critical High	280	0	0	0	0	0	0	0	16	0	0	0

Notes:
Values in the table do not include Restoration Flows that may coincide with flood releases because they cannot be recaptured per the Settlement.
Losses and flow restriction were calculated as follows:
1 Losses in Reach 1 and Reach 2 are calculated as defined in the Settlement.
2 5% operational loss at Mendota Pool
3 Flow restricted to 350 cfs in Reach 4
Key:
cfs = cubic feet per second
SJRRP = San Joaquin River Restoration Program

3.2.2 Environmental Consequences

This section discusses the environmental consequences of the alternatives on water resources. Overall water supply changes for the Friant Division long-term contractors as a result of the implementation of Restoration Flow actions, and including recapture of Interim and Restoration Flows, is discussed in the SJRRP PEIS/R. For additional information on the potential water resources impacts of recirculating recaptured Restoration Flows see the Recirculation EA.

No Action Alternative

Under the No Action Alternative, Reclamation would not facilitate recapture of Restoration Flows at PID and/or BCID and would rely on recapture at Mendota Pool and in the Delta, potentially resulting in fewer Restoration Flows recaptured for recirculation to the Friant Contractors. It is reasonable to assume an increase in groundwater pumping in the Friant Division as a result of the potential reduction in recaptured water that could be recirculated. The No Action Alternative would not result in any violations of existing water quality standards or substantial water quality changes that would adversely affect beneficial uses, or have substantive impacts on public health.

Alternative A – Recapture at Patterson Irrigation District

Under Alternative A, recapture of a portion of Restoration Flows would occur at PID using existing facilities. The portion of Restoration Flows available for recapture at PID will be limited by the availability of Restoration Flows, as shown in Table 3-1, and the 40 cfs of pumping capacity at PID. The potential upper bound of recapture at PID facilities is reported in Table 3-2 as a percent of the total San Joaquin River flow at Vernalis. As shown, the portion of flows that could be recaptured at PID is minimal in comparison to the availability of flows in the San Joaquin River. Alternative A would not result in any violations of existing water quality standards or substantial water quality changes that would adversely affect beneficial uses, or have substantive impacts on public health. It is reasonable to assume that there would be reduced groundwater pumping in the Friant Division districts that receive the recaptured water that would be recirculated.

Table 3-2.
Average Monthly Restoration Flow Able to be Recaptured at PID as a Percentage of Average Monthly San Joaquin River Flow at Vernalis, by SJRRP Year Type

SJRRP Year Type	March (cfs)	April (cfs)	May (cfs)	June (cfs)	July (cfs)	August (cfs)	September (cfs)	October (cfs)	November (cfs)	December (cfs)	January (cfs)	February (cfs)
Wet	0.0%	0.1%	0.1%	0.1%	0.2%	1.0%	1.0%	1.0%	0.8%	0.7%	0.4%	0.3%
Normal-Wet	0.4%	0.4%	0.6%	0.8%	1.6%	1.8%	1.6%	1.3%	1.5%	1.0%	0.4%	0.2%
Normal-Dry	1.1%	0.8%	1.1%	2.2%	3.0%	2.9%	2.2%	1.7%	1.9%	1.4%	1.1%	0.7%
Dry	1.6%	1.5%	1.6%	3.1%	3.6%	3.2%	2.6%	2.0%	2.1%	2.2%	0.9%	0.6%
Critical High	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%

Note:

Amount of Restoration Flows able to be recaptured at PID is based on the availability of Restoration Flows at PID's diversion facility and PID's proposed 40 cubic feet per second instantaneous pumping capacity limitation. The values in this table do not consider available DMC capacity nor any downtime/maintenance or PID capacity constraints.

Key:

cfs = cubic feet per second

PID = Patterson Irrigation District

SJRRP = San Joaquin River Restoration Program

Alternative B – Recapture at Banta-Carbona Irrigation District

Under Alternative B, recapture of a portion of Restoration Flows would occur at BCID using existing facilities. The portion of Restoration Flows available for recapture at BCID will be limited by the availability of Restoration Flows, as shown in Table 3-1, and the 65 cfs of pumping capacity at BCID. The potential upper bound of recapture at BCID facilities is reported in Table 3-3 as a percent of the total San Joaquin River flow at Vernalis. As shown, the portion of flows that could be recaptured at BCID is minimal in comparison to the availability of flows in the San Joaquin River. The recapture at BCID would be added to the Delta Exports calculation, so would have no impact on the Net Delta Outflow Index as defined by D-1641. Alternative B would not result in any violations of existing water quality standards or substantial water quality changes that would adversely affect beneficial uses, or have substantive impacts on public health. It is reasonable to assume that there would be reduced groundwater pumping in the Friant Division districts that receive the recaptured water that would be recirculated.

Table 3-3.
Average Monthly Restoration Flow Able to be Recaptured at BCID as a Percentage of Average Monthly San Joaquin River Flow at Vernalis, by SJRRP Year Type

SJRRP Year Type	March (cfs)	April (cfs)	May (cfs)	June (cfs)	July (cfs)	August (cfs)	September (cfs)	October (cfs)	November (cfs)	December (cfs)	January (cfs)	February (cfs)
Wet	0.0%	0.1%	0.1%	0.1%	0.2%	1.1%	1.6%	1.6%	1.4%	1.1%	0.6%	0.4%
Normal-Wet	0.7%	0.7%	1.0%	1.3%	1.8%	1.9%	2.5%	2.1%	2.5%	1.6%	0.7%	0.4%
Normal-Dry	1.8%	1.3%	1.8%	3.6%	3.2%	3.1%	3.4%	2.7%	3.0%	2.2%	1.8%	1.1%
Dry	2.7%	2.4%	2.5%	5.0%	3.8%	3.4%	4.0%	3.3%	3.4%	3.5%	1.4%	0.9%
Critical High	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%

Note:

Amount of Restoration Flows able to be recaptured at BCID is based on the availability of Restoration Flows at BCID's diversion facility and BCID's proposed 65 cubic feet per second instantaneous pumping capacity limitation. The values in this table do not consider available DMC capacity nor any downtime/maintenance or BCID capacity constraints.

Key:

BCID = Banta-Carbona Irrigation District

cfs = cubic feet per second

SJRRP = San Joaquin River Restoration Program

Alternative C – Recapture at Patterson Irrigation District and Banta-Carbona Irrigation District Alternative C would be the aggregate of Alternatives A and B with recapture of Restoration Flows at PID and BCID using existing facilities. Alternative C is for a temporary total combined 105 cfs diversion at PID and BCID, 40 cfs and 65 cfs respectively. The portion of Restoration Flows available for recapture at PID and BCID will be limited by the availability of Restoration Flows, as shown in Table 3-1, and the 105 cfs combined pumping facilities at PID (40 cfs) and BCID (65 cfs). The potential upper bound of recapture at PID and BCID facilities is reported in Table 3-4 as a percent of the total San Joaquin River flow at Vernalis. As shown, the portion of flows that could be recaptured at PID and BCID is minimal in comparison to the availability of flows in the San Joaquin River. The recapture at BCID would be added to the Delta Exports calculation, so would have no impact on the Net Delta Outflow Index as defined by D-1641. Alternative C would not result in any violations of existing water quality standards or substantial water quality changes that would adversely affect beneficial uses, or have substantive impacts on public health. It is reasonable to assume that there would be reduced groundwater pumping in the Friant Division districts that receive the recaptured water that would be recirculated.

Table 3-4.
Average Monthly Restoration Flow Able to be Recaptured at PID and BCID as a Percentage of Average Monthly San Joaquin River Flow at Vernalis, by SJRRP Year Type

SJRRP Year Type	March (cfs)	April (cfs)	May (cfs)	June (cfs)	July (cfs)	August (cfs)	September (cfs)	October (cfs)	November (cfs)	December (cfs)	January (cfs)	February (cfs)
Wet	0.0%	0.2%	0.1%	0.2%	0.2%	1.1%	1.6%	2.6%	2.2%	1.8%	1.0%	0.7%
Normal-Wet	1.1%	1.1%	1.4%	1.8%	1.8%	1.9%	2.5%	3.4%	4.0%	2.5%	1.1%	0.6%
Normal-Dry	3.0%	2.2%	2.3%	4.5%	3.2%	3.1%	3.4%	4.4%	4.9%	3.6%	3.0%	1.7%
Dry	4.3%	3.8%	3.0%	6.0%	3.8%	3.4%	4.0%	5.3%	5.5%	5.7%	2.2%	1.5%
Critical High	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%

Note:

Amount of Restoration Flows able to be recaptured at PID and BCID is based on the availability of Restoration Flows at PID and BCID's diversion facility and PID and BCID's proposed combined 105 cubic feet per second instantaneous pumping capacity limitation. The values in this table do not consider available DMC capacity nor any downtime/maintenance or PID and BCID capacity constraints.

Key:

BCID = Banta-Carbona Irrigation District

cfs = cubic feet per second

PID = Patterson Irrigation District

SJRRP = San Joaquin River Restoration Program

3.3 Cumulative Impacts

Temporary recaptured Restoration Flows from PID and/or BCID recirculated to the CVP would not have any controversial or highly uncertain effects, or involve unique or unknown environmental risks. The action alternatives would not trigger other water service actions and would not contribute to cumulative effects to physical resources when added to other past, present or reasonably foreseeable actions. The canals, rivers, creeks, and conveyance and distribution facilities associated with the action alternatives are managed primarily for agricultural supplies. The action alternatives would not interfere with the deliveries, operations, or cause substantial adverse changes to the conveyance facilities.

The remainder of the SJRRP actions, including the continued release of future Restoration Flows from Friant Dam, the recapture of flows at specific San Joaquin River and Delta diversion and/or pumping facilities are all reasonably foreseeable and required under the Settlement and the Act. Future program actions related to the SJRRP have been addressed in the SJRRP PEIS/R (Reclamation 2012a), as discussed earlier in this EA. Areas of potential concern, such as water supply impacts, recapture mechanisms, and cumulative impacts have been discussed within the PEIS/R.

Currently, Reclamation is preparing the Long-term Recapture and Recirculation of Restoration Flows EIS for the SJRRP. In July 2015 Reclamation published a Notice of Intent to prepare an EIS to identify a set of alternatives for the recapture and recirculation of Restoration Flows to long-term contractors of the Friant Division of the CVP.

The proposed recapture, when added to other actions, would not contribute to significant increases or decreases in environmental conditions. The action alternatives would occur only for one year and recapture a maximum of up to: 28,979 AF of Restoration Flows in Alternative A; 47,090 AF of Restoration Flows in Alternative B; or 76,069 AF of recaptured Restoration Flows in Alternative C. The action alternatives would not be precedent-setting. The action alternatives would not contribute to cumulative impacts on water resources, land use, biological resources, cultural resources, ITAs, air quality, or climate change and greenhouse gas emissions.

4.0 Consultation and Coordination

4.1 National Environmental Policy Act

This draft EA has been prepared pursuant to NEPA, which was signed into law in 1969 (42 U.S. Code [USC] Section 4321 et seq.). In addition, it was prepared in accordance with CEQ regulations for implementing NEPA, 40 CFR Parts 1500- 1508, and General Services Administration (GSA) Order ADM 1095.1F. This draft EA assesses if the action alternatives would cause any significant environmental effects. This draft EA is being circulated for 30 days for public review and comment.

4.2 Fish and Wildlife Coordination Act of 1934 (16 USC § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The action alternatives do not involve Federal water development projects; therefore, the FWCA does not apply.

4.3 Endangered Species Act of 1973 (16 USC § 1531 et seq.)

Section 7 of the Endangered Species Act (ESA) requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

The action alternatives would not have any effect on listed species beyond those analyzed in the previously described applicable ESA analyses. The action alternatives would not change the land use patterns of the cultivated or fallowed fields that have some value to listed species. In addition, the short duration of the water availability, the requirement that no native lands be converted without consultation with the USFWS, and the stringent requirements for transfers under applicable laws would prevent any effect to any federally listed species or any critical habitat.

4.4 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended (16 USC 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the NRHP. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the NRHP. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties. The activities associated with the action alternatives would include no new ground disturbance, no change in land use, and the use of existing conveyance features to move and store water. Reclamation has determined that there would be no potential to affect historic properties by the action alternatives pursuant to 36 CFR 800.3(a)(1).

4.5 Migratory Bird Treaty Act of 1918 (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The action alternatives would not change the land use patterns of the cultivated or fallowed fields that have value to birds protected by the MBTA; therefore, the action alternatives would have no effect on birds protected by the MBTA.

4.6 Executive Order 113007 and American Indian Religious Freedom Act of 1978 – Indian Trust Assets and Sacred Sites on Federal Lands

Executive Order 113007 and the American Indian Religious Freedom Act of 1978 are designed to protect ITAs, accommodate access and ceremonial use of Native American sacred sites by Native American religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and protect and preserve the observance of traditional Native American religions. The action alternatives would not violate these protections.

4.7 Executive Order 12898 – Environmental Justice in Minority and Low-Income Populations

Executive Order 12898 requires Federal agencies to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies, and activities on minority and low-income populations. The action alternatives have been assessed for potential environmental, social, and economic impacts on minority and low-income populations. Minority and low-income populations would not be disproportionately exposed to adverse effects relative to the benefits of the action.

4.8 Central Valley Project Improvement Act

Reclamation's evolving mission was written into law on October 30, 1992, in the form of Public Law 102-575, the Reclamation Projects Authorization and Adjustment Act of 1992. Included in the law was Title 34, the CVPIA. The CVPIA amended previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic water supply uses, and fish and wildlife enhancement as having equal priority with power generation. The action alternatives would be consistent with CVPIA.

This page left blank intentionally.

5.0 List of Preparers and Reviewers

5.1 U.S. Department of the Interior, Bureau of Reclamation

Becky Victorine, Natural Resources Specialist, San Joaquin River Restoration Program

Chad Moore, Flow & Science Coordinator, San Joaquin River Restoration Program

Erika Kegel, Project Manager, San Joaquin River Restoration Program

Traci Michel, Deputy Program Manager, San Joaquin River Restoration Program

5.2 MWH

Meredith Parkin, J.D., Principal Environmental Scientist

William Smith, P.E., Principal Engineer

John Roldan, P.E., Principal Water Resources Planner

Jeffrey Payne, P.E, Principal Water Resources Planner

Cynthia Jones, Senior Biologist

Rina Binder-Macleod, Water Resources Planner

This page left blank intentionally.

6.0 References

California Natural Diversity Database (CNDDB) 2015. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch. Sacramento, California.

California Department of Water Resources. 2015. California's Groundwater Update 2013 A Compilation of Enhanced Content for California Water Plan Update 2013. April. . http://www.waterplan.water.ca.gov/topics/groundwater/index.cfm, accessed November 20, 20165.

Dahl, T.E., and C.E. Johnson. 1991, Wetlands--Status and trends in the conterminous United States, mid-1970s to mid-1980s: Washington, D.C., U.S. Fish and Wildlife Service.

DWR. *See* California Department of Water Resources.

ESA. 2006. Patterson Irrigation District Fish Screen Project Draft Initial Study and Mitigated Negative Declaration/Environmental Assessment and Finding of No Significant Impact. Prepared for: Patterson Irrigation District. November.

Reclamation. *See* U.S. Department of the Interior, Bureau of Reclamation.

Reclamation and DWR. *See* U.S. Department of the Interior, Bureau of Reclamation, and California Department of Water Resources.

U.S. Department of the Interior, Bureau of Reclamation. 2013. Final Recirculation of Recaptured Water Year 2013-2017 San Joaquin River Restoration Program Flows Environmental Assessment.

———. 2012a. San Joaquin River Restoration Program Final Program Environmental Impact Statement/Environmental Impact Report. July.

———. 2012b. Record of Decision for San Joaquin River Restoration Program Final Program Environmental Impact Statement/Environmental Impact Report. September 28.

———. 2012c. Friant Division Project Website: http://www.usbr.gov/projects/Project.jsp?proj_Name=Friant+Division+Project. Accessed: November 1, 2013.

———. 2012d. Transfer of up to 450 Acre-Feet of Replacement Water from Patterson Irrigation District to Del Puerto Water District, Final Environmental Assessment EA-12-081. December.

———. 2010. Draft Environmental Assessment Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron-Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District. January.

———. 2009. Patterson Irrigation District One-Time Delivery of Replacement Water to Del Puerto Water District, Final Environmental Assessment EA-09-94. July.

U.S. Department of the Interior, Bureau of Reclamation, and California Department of Water Resources. 1986. Agreement Between the United States of America and the State of California for Coordinated Operation of the Central Valley Project and the State Water Project. Sacramento, California. November.

SWRCB. *See* State Water Resources Control Board.

State Water Resources Control Board.1999. 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. State Water Resources Control Board. Sacramento, California. 95-1 WR. May.