

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Two-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of Groundwater in the Delta-Mendota Canal – Contract Years 2012 through 2014 (March 1, 2012 – February 28, 2014)

EA-12-005



U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

May 2012

Mission Statements

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

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

Please note: A vertical line in the left margin indicates a change since the draft Environmental Assessment.

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Appendix A:	2012 Delta-Mendota Canal Pump-in Program Water Quality Monitoring Plan
Appendix B:	San Joaquin River Water Authority 2012 Exchange Contractors Letter

List of Acronyms and Abbreviations

AF	acre-feet
AF/y	AF per year
APE	area of potential effects
BCID	Banta-Carbona Irrigation District
BBID	Byron Bethany Irrigation District
BO	Biological Opinion
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CCID	Central California Irrigation District
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DMC	Delta-Mendota Canal
DPWD	Del Puerto Water District
DSA	Direct Service Area
DWR	California Department of Water Resources
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Exchange Contractors	San Joaquin River Exchange Contractors
FWCA	Fish & Wildlife Coordination Act
GHG	Greenhouse gases
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
Mendota WA	Mendota Wildlife Area
Mg/L	milligram per liter
M&I	municipal and industrial
MOU	Memorandum of Understanding
MP	Milepost
MSWD	Mercy Springs Water District
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
O ₃	ozone
NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
Pacheco	Pacheco Water District
Panoche	Panoche Water District
Pb	Lead

PID	Patterson Irrigation District
PM _{2.5}	particulate matter 2.5
PM ₁₀	particulate matter 10
Project	Central Valley Project
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SJR	San Joaquin River
SLC	San Luis Canal
SLDMWA	San Luis & Delta-Mendota Water Authority
SLWD	San Luis Water District
SO ₂	sulfur dioxide
SOD	south-of-Delta
SWP	California State Water Project
TDS	total dissolved solids
WWD	Westlands Water District
USFWS	United States Fish and Wildlife Service

Section 1 Introduction

The Bureau of Reclamation (Reclamation) proposes to issue Exchange Agreements and/or Warren Act contracts to requesting Central Valley Project (CVP) contractors within the Delta Division and San Luis Unit to convey groundwater in Federal facilities.

1.1 Background

The San Luis & Delta-Mendota Water Authority (SLDMWA), on behalf of seven of its member agencies, has requested approval of two-year Exchange Agreements and/or Warren Act contracts to pump groundwater into the Delta Mendota Canal (DMC) for delivery to contractors during the period March 1, 2012 through February 28, 2014, (Contract Years 2012-2013). The Warren Act (Act as of February 21, 1911, CH. 141, (36 STAT. 925)) authorizes the Reclamation to negotiate agreements to store or convey Non-project water when excess capacity is available in Federal facilities. Section 14 of the Reclamation Project Act of 1939 allows for contracts for exchange or replacement of water, water rights. Section 3408(c) of P.L. 102-575, Title 34, Central Valley Project Improvement Act (CVPIA) allows for the exchange, impoundment, storage, carriage, and delivery of CVP and Non-project water for domestic, municipal, industrial, fish and wildlife, and any other beneficial purpose.

Reclamation completed a draft Environmental Assessment/Finding of No Significant Impact which was made available for public review and comment between March 14, 2012 and April 14, 2012. No comments were received.

1.2 Purpose and Need

California has experienced reduced water supplies to many water districts in recent years. South-of-Delta (SOD) CVP water service contractors experienced reduced water supply allocations in 2007, 2008, and 2009 due to hydrologic conditions and/or regulatory constraints. Though 2010 and 2011 had above normal rainfall, these CVP contractors received only 45 percent of their full CVP contract supply in 2010 and 80% in 2011. The hydrologic conditions for 2012 have been below normal and SOD CVP contractors may need additional supplies to avoid shortages for their customers.

1.3 Reclamation's Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the National Environmental Policy Act (NEPA) analysis and decision making process of this Environmental Assessment (EA) and include the following:

- Reclamation States Emergency Drought Relief Act – Section 102 of the Reclamation States Emergency Drought Relief Act of 1991 provides for use of Federal facilities and contracts for temporary water supplies, storage and conveyance of Non-project water inside and

outside project service areas for municipal and industrial (M&I), fish and wildlife and agricultural uses.

- Reclamation States Emergency Drought Relief Act - Section 305 of 1991, enacted March 5, 1992 (106 Stat. 59), also authorizes Reclamation to utilize excess capacity to convey Non-project water.
- San Joaquin County Groundwater Export Ordinance Number 401.4 - San Joaquin County has adopted an ordinance, 401.4 Section 5-8100 of Title 5 of the Ordinance Code of San Joaquin County, which requires a permit to extract and export groundwater for use outside of the county. This ordinance is hereby incorporated by reference into the Proposed Action.
- Contracts for Additional Storage and Delivery of Water – Central Valley Project Improvement Act (CVPIA) of 1992, Title 34 (of Public Law 102-575), Section 3408, Additional Authorities (c) authorizes the Secretary of the Interior to enter into contracts pursuant to Reclamation law and this title with any Federal agency, California water user or water agency, State agency, or private nonprofit organization for the exchange, impoundment, storage, carriage, and delivery of CVP and Non-project water for domestic, municipal, industrial, fish and wildlife, and any other beneficial purpose, except that nothing in this subsection shall be deemed to supersede the provisions of section 103 of Public Law 99-546 (100 Stat. 3051). The CVPIA is incorporated by reference.
- Water Quality Standards – Reclamation requires that the operation and maintenance of CVP facilities shall be performed in such manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality standards and monitoring requirements are established by Reclamation to ensure that imported Non-project water does not negatively impact existing water quality conditions (Appendix A). Title XXXIV CVPIA, October 30, 1992, Section 3405(a).
- Reclamation Reform Act, October 12, 1982.
- Reclamation’s Interim Guidelines for Implementation of Water Transfers under Title XXXIV of Public Law 102-575 (Water Transfer), February 25, 1993.
- Reclamation and United States Fish and Wildlife Service (USFWS) Regional, Final Administrative Proposal on Water Transfers, April 16, 1998.
- Reclamation’s Mid-Pacific Regional Director’s Letter entitled “Delegation of Regional Functional Responsibilities to the Central Valley Project (CVP) Area Offices – Water Transfers”, March 17, 2008.
- Warren Act - Act as of February 21, 1911, CH. 141, (36 STAT. 925) authorizes the Reclamation to negotiate agreements to store or convey Non-project water when excess capacity is available in Federal facilities.
- February 3, 2012 letter from the San Joaquin River Exchange Contractors Authority (Appendix B).

1.4 Scope

This EA has been prepared to examine the potential impacts on environmental resources as a result of No Action Alternative of not conveying Non-project water in Federal facilities and the Proposed Action of conveying Non-project water in Federal facilities.

The following districts are considered in this EA in the effects analysis and as such could potentially participate in this Proposed Action (Figure 1-1):

- Banta-Carbona Irrigation District (BCID)
- Del Puerto Water District (DPWD)
- Mercy Springs Water District (MSWD)
- Pacheco Water District (Pacheco)
- Panoche Water District (Panoche)
- San Luis Water District (SLWD)
- West Stanislaus Irrigation District (WSID)

1.5 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment of the Proposed Action and has determined that there is no potential for direct, indirect, or cumulative effects to the following resources:

- Cultural Resources: The Proposed Action is not the type of activity that has potential to affect historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1). There would be no modification of CVP conveyance facilities and no activities that would result in ground disturbance under the Proposed Action. Because there would be no potential to affect historic properties, no cultural resources would be impacted as a result of implementing the Proposed Action.
- Air Quality: No new facilities would be needed as a result of the Proposed Action that would cause emissions from construction activities. The majority of pumps to convey the water under the Proposed Action are electric. These pumps would not emit pollutants at the pump; the source of the pollutants originates at the power plant. Power plants are permitted based on their maximum operating potential. The additional electricity would not result in the power plant exceeding operating capacity, and, thus, the applicable emissions permit. The emission modeling resulted in the determination that operation of the diesel powered pumps would be in compliance with the Clean Air Act and all applicable San Joaquin Valley Air Pollution Control District requirements.
- Global Climate: Greenhouse gases generated are expected to be extremely small compared to sources contributing to potential climate change since the movement of water under the Proposed Action would be conveyed mostly via electric pumps which would not result in the power plant exceeding operating capacity, and, thus, the applicable emissions permit. The greenhouse gas emissions from the diesel pumps are well below the de minimus thresholds.

As there would be no impact to the resources listed above as a result of the Proposed Action or the No Action alternative, they will not be considered further.

1.6 Resources Requiring Further Analysis

This EA will analyze the affected environment of the Proposed Action and No Action Alternative in order to determine the potential direct, indirect, and cumulative effects to the following resources:

- Water Resources

- Geologic Resources
- Land Use
- Biological Resources
- Indian Sacred Sites
- Indian Trusts Assets
- Environmental Justice
- Socioeconomic Resources

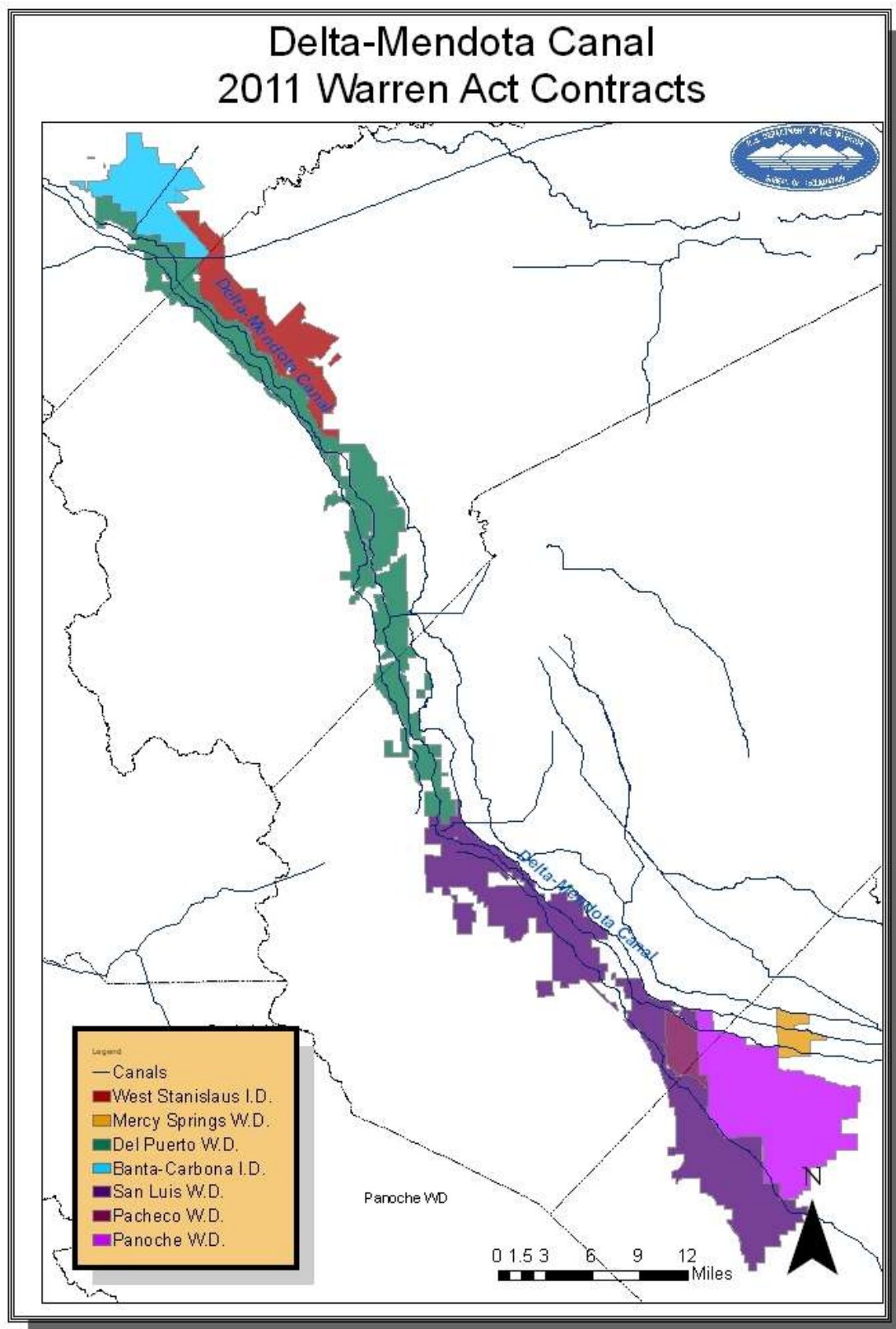


Figure 1-1 General Location Map

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Section 2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable district's CVP water service contracts. Reclamation would not issue two-year Exchange Agreements and/or two-year Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next two contract years. The districts could still pump groundwater for local use, but would not be authorized to pump the groundwater into the DMC for conveyance to other areas.

2.2 Proposed Action

Reclamation proposes to issue two-year Exchange Agreements and/or two-year Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit. The term would be March 1, 2012 through February 28, 2013 for pumping and conveyance, and March 1, 2012 through February 28, 2014 for storage in San Luis Reservoir (SLR) and conveyance from the SLR.

Reclamation has capped the Proposed Action at 50,000 acre-feet (AF) for all the districts combined participating in the DMC Pump-in Program. That is to say, the total amount of groundwater pumped into the DMC would not exceed 50,000 AF. Conveyance and storage of Non-project water in CVP facilities would be subject to available capacity.

Table 2-1 is a list of the water districts that could potentially participate in this Proposed Action and the estimated pumping quantities.

Table 2-1 Warren Act Contract/Exchange Agreement Quantities for Pumping into DMC

District	Quantity for 2012 (AF)
Banta Carbona Irrigation District	5,000
Del Puerto Water District	10,000
West Stanislaus Irrigation District	3,000
San Luis Water District	10,000
Panoche Water District	10,000
Pacheco Water District	6,000
Mercy Springs Water District	6,000
Total	50,000

Table 2-2 is a list of those districts that would require delivery of a portion of the 50,000 AF of Non-project water from the DMC to the San Luis Canal (SLC) via an exchange with Reclamation.

Table 2-2 Groundwater Pumping Requiring Exchange with Reclamation from the SLC

District	Quantity for 2012 (AF)
San Luis Water District	10,000
Panoche Water District	10,000
Pacheco Water District	6,000

2.2.1 Source of Non-Project Water

The source of the Non-project water would be groundwater pumped from privately owned wells directly into the DMC. The quantity of groundwater pumped into the DMC would be measured with flow-meters that would be read and calibrated by SLDMWA field staff. Each district would then take out a like amount from turnouts on either the DMC or the SLC to be conveyed through their distribution systems for agricultural use to water users within the district.

Those wells that require testing would be tested in accordance with the requirements described in the 2012 Delta-Mendota Canal Pump-in Program Water Quality Monitoring Plan in Appendix B (2012 Monitoring Plan).

Any other wells within the spatial extent of this environmental analysis may be included in the program as long as they meet the water quality requirements specifically described in the 2012 Monitoring Plan. Note that addition of wells would not increase per district volume or total volume of Non-project water that could be conveyed under this program.

All wells that are found to meet the requirements described in the Delta-Mendota Canal 2012 Water Quality Monitoring Program must have an exhibit C amendment in the contract prior to pumping. Any ground disturbing activity such as pipeline installation would require separate NEPA analysis as this EA is limited to water movements.

2.2.2 Environmental Commitments/Requirements for the Proposed Action

Each district would be required to confirm that the proposed pumping of groundwater would be compatible with local groundwater management plans. Each district would be limited to pumping a quantity below the “safe yield” as established in their groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts.

Water quality and monitoring requirements are established by Reclamation (Appendix A). These standards were established to protect water quality in Federal facilities by ensuring that imported water does not impair existing uses or negatively impact existing water quality conditions. The 2012 Monitoring Plan will measure changes in the quality of water caused by the conveyance of groundwater during 2012. The plan has been prepared by Reclamation, in cooperation with the SLDMWA, and the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors), with assistance from staff of BCID, DPWD, SLWD, and Panoche.

In 1995, the wells in the Lower DMC were grouped into four Management Areas in order to manage the pumping program. Subsidence from groundwater pumping occurred in Management Areas 2 and 3, resulting in subsidence to the DMC canal and local facilities (Figure 2.1). As

such, pumping in those two areas has been excluded in the current program. In addition, pumping may be limited in the Los Banos area due to changes in groundwater levels in city wells alleged to be the result of non-project wells. A new groundwater study is due in Spring 2012. Reclamation would work with the city of Los Banos, Exchange Contractors, and SLWD to prevent local problems.

The water would be used for irrigation purposes on established lands. There would be no new construction or excavation occurring as part of the Proposed Action. Any associated ground disturbing activities would require separate NEPA analysis. Pumping and conveyance would occur within existing wells, meters, and pipes across DMC right-of-way, and existing water diversion and field delivery facilities.

No native or untilled land (fallow for three years or more) may be cultivated with the water involved with these actions. Most of the water would be used to sustain permanent crops (orchards, vineyards).

In addition to Reclamation's groundwater monitoring program requirements and the 2012 San Joaquin River Exchange Contractors' Water Authority letter, conditions specified in the Environmental Commitment Program would be complied with.

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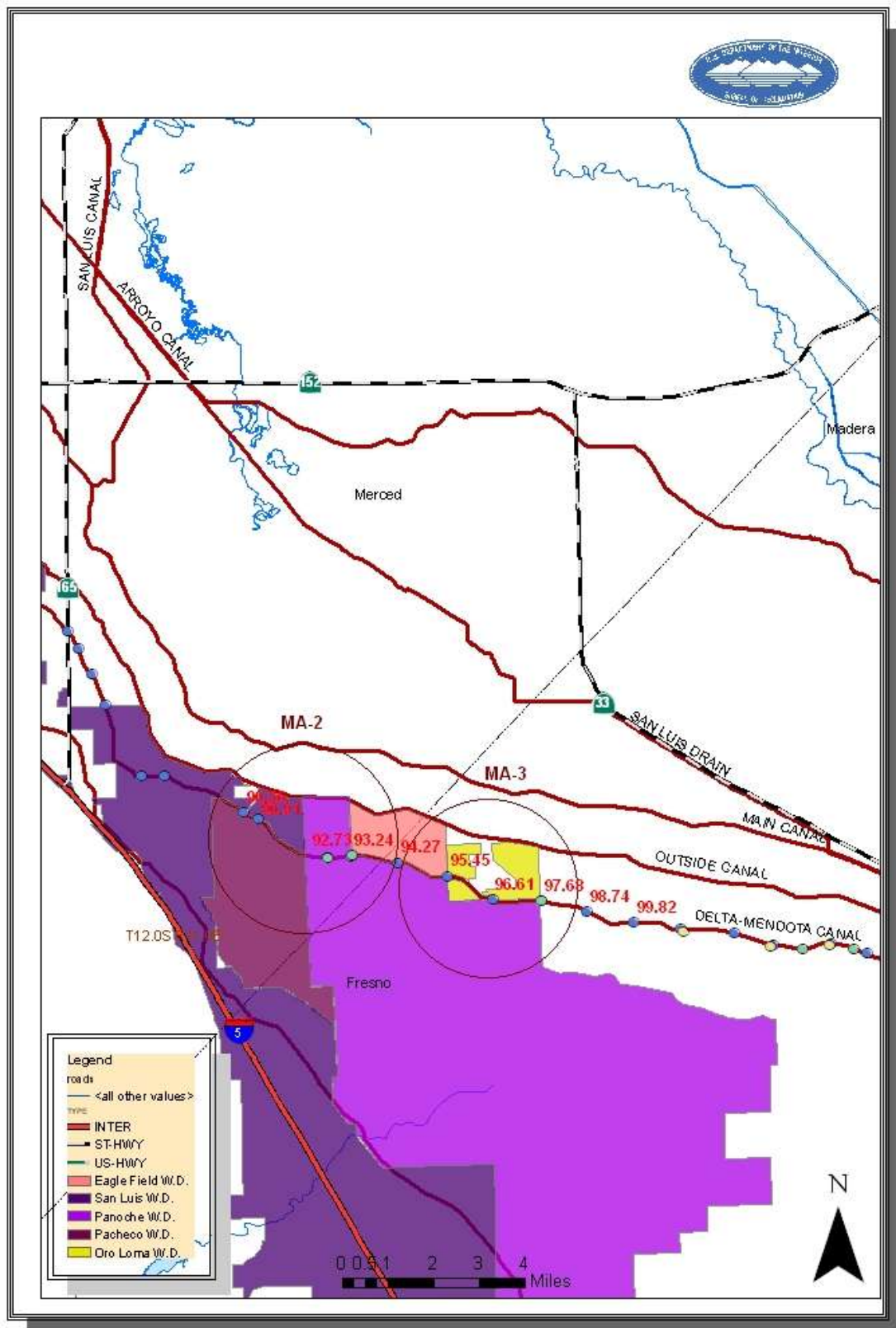


Figure 2-1 Well Management Areas 2 and 3

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Section 3 Affected Environment and Environmental Consequences

This section identifies the affected environment and potential adverse or beneficial environmental consequences involved with the Proposed Action and the No Action Alternative.

3.1 Water Resources

3.1.1 Affected Environment

Surface Water Resources

Baseline conditions are described as the existing environment, and the existing environment is defined as the conditions during the past five years. The five-year average allocation of CVP water supplies delivered to the water contractors is described in Table 3-1. It lists deliveries of CVP water on a yearly basis for agriculture purposes from 2007 to 2011. The five-year average is 49 percent of contract amounts for agriculture.

Table 3-1 5-Year CVP Allocation Percentages

Year	Allocation Percentage
2007	50
2008	40
2009	10
2010	45
2011	80
5-year Average	45
2012 Forecast	30

The annual contract amounts for the districts is 442,212 AF, thus the baseline supply (45%) is 198,995 AF (Table 3-2).

Table 3-2 Baseline Supply

Water District	Maximum Contract Amount	45 Percent of Contract Amount	30 percent of Contract Amount
Banta-Carbona Irrigation District	20,000	9,000	6,000
Del Puerto Water District	140,210	63,094	42,063
Mercy Springs Water District	2,842	1,279	853
West Stanislaus Irrigation District	50,000	22,500	15,000
Pacheco Water District	10,080	4,536	3,024
Panoche Water District	94,000	42,300	28,200
San Luis Water District	125,080	56,286	37,524
TOTAL	442,212	198,995	132,664

Banta-Carbona Irrigation District BCID is located in San Joaquin County just south of the City of Tracy and is adjacent to the DPWD to the southwest and the WSID to the southeast. The district's primary supply of water is its pre-1914 water rights on the San Joaquin River. Historically, the district uses all of its pre-1914 water rights in order to irrigate lands within the district. The district has a contract with Reclamation for 20,000 AF of CVP water. CVP water is used as a supplemental supply to the district's pre-1914 water supply for agricultural purposes.

Del Puerto Water District DPWD is primarily an agricultural district. DPWD irrigates 40,000 acres and its contract amount is 140,210 AF of CVP water. Currently, the only CVP supply used for M&I purposes is the one or two acre-foot per month of landscape water supplied to a small amount of acreage recently converted to commercial use. All remaining CVP supplies are used for agriculture.

Mercy Springs Water District MSWD is entirely an agricultural district. MSWD's current size is 3,618 acres and has a CVP contract supply of 2,842 AF. Across most of the district, salt tolerant pasture grasses and halophytes are grown with local drainage water under the Grassland Bypass Project.

Pacheco Water District The Pacheco's current size is 4,000 total acres. Pacheco was formed in 1953 for the purpose of obtaining a CVP water supply. Pacheco entered into a long-term contract with Reclamation for 10,080 AF of water supply from the DMC and SLC. Pacheco's CVP supply is their primary water supply although the district also has a surface water supply of Non-project water from the Central California Irrigation District (CCID). The district also owns one groundwater well but does not pump groundwater due to the quality problems.

Panoche Water District On August 16, 1955, the Panoche entered into a long-term water service contract with Reclamation. This contract provided for the delivery to the Panoche of 93,988 AF of water per year from the DMC. Panoche's current contract with Reclamation is for 94,000 AF per year. The contract service area is approximately 35,000 acres. Panoche supplies about 50 AF of water per year for M&I purposes.

West Stanislaus Irrigation District WSID serves an area that is unincorporated and agricultural, located west of the San Joaquin River, northwest of the City of Patterson. The district includes the unincorporated communities of Westley, Grayson and Vernalis. A small portion of the district extends into San Joaquin County. WSID's current size is approximately 21,676 acres.

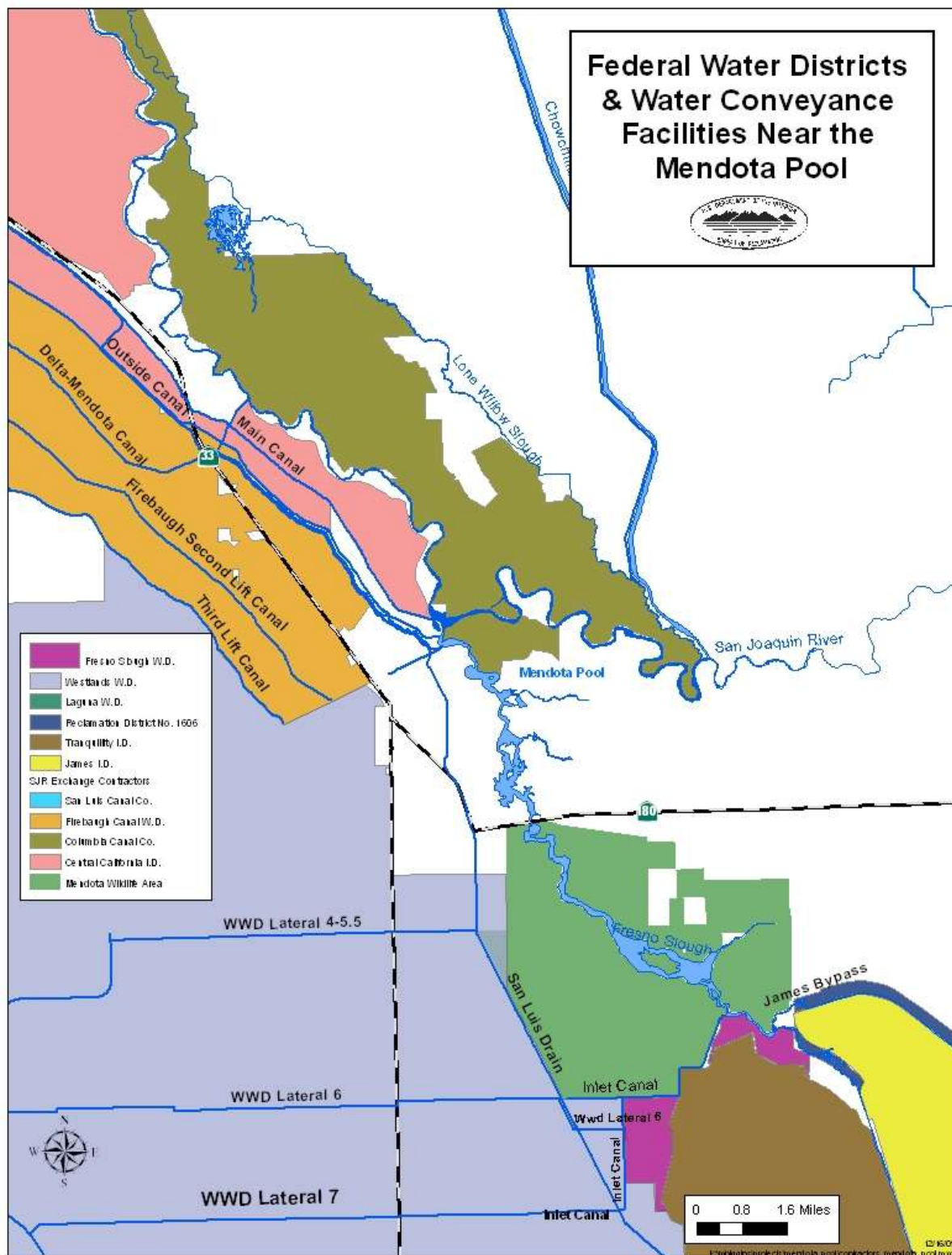
WSID provides its customers with irrigation water for agricultural purposes. This water is provided via several sources including WSID's pre-1914 water rights from the Tuolumne and San Joaquin Rivers, groundwater from four deep wells within WSID's boundaries, and importing water from the DMC as part of their CVP contract for 50,000 AF. WSID, under a water rights agreement, also sells their pre-1914 water rights water for irrigation purposes to 13 landowners, which includes approximately 2,203 irrigable acres outside its sphere of influence in the "White Lake" area (north of the unincorporated community of Grayson) [Stanislaus 2009].

San Luis Water District SLWD is located on the western side of the San Joaquin Valley near the City of Los Banos, in both Merced and Fresno Counties. SLWD's current size is approximately 66,218 acres and their CVP contract amount is 125,080 AF. Although water deliveries by the SLWD historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The SLWD currently supplies approximately 800 acre-feet per year (AF/y) to approximately 1,300 homes and businesses. M&I demands within the district are expected to increase.

San Joaquin River Exchange Contractors The Exchange Contractors consist of Central California Irrigation District, Columbia Canal Company, Firebaugh Canal Water District, and San Luis Canal Company (Figure 3-1). The Exchange Contractors hold historic water rights to the San Joaquin River. Their service area is located on the west side of the San Joaquin Valley. In exchange for the regulation and diversion of the San Joaquin River at Millerton Lake (Friant Division), Reclamation agreed to supply water to the Exchange Contractors from the CVP's Delta supply. The Exchange Contractors provide water delivery to over 240,000 acres of irrigable land on the west side of the San Joaquin Valley, spanning a distance roughly from the town of Mendota in the south to the town of Crows Landing in the north. The Exchange Contractors in-district conveyance and delivery systems generally divert water from the DMC and Mendota Pool to convey water to their delivery turnouts. Deliveries include conveyance of water to wildlife areas.

CVP Facilities The DMC provides for the transport of water through the central portion of California's Central Valley and acts as a hub around which the CVP and SWP revolve. The DMC is part of the Delta Division facilities of the CVP. The Delta Division facilities convey water from the Delta to bolster irrigation supplies to lands formerly dependent on water from the San Joaquin River or groundwater. The facilities also provide for the transport of water through both the Sacramento-San Joaquin River and the San Francisco Bay-Delta Estuary and for the delivery of water to CVP and SWP contractors in the San Joaquin Valley and Southern California SWP contractors (Reclamation 2007).

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Mendota Pool The Mendota Pool is a regulating reservoir for water pumped from the Delta and delivered by the DMC. The Mendota Pool is impounded by Mendota Dam, which is owned and operated by CCID. Currently, Mendota Pool is sustained by the inflow from the DMC, which typically conveys 2,500 to 3,000 cubic feet per second (cfs) to the Mendota Pool during the irrigation season. A lesser amount of water from the San Joaquin River enters Mendota Pool under the San Joaquin River Restoration Program; more enters during periods of flood flow from the San Joaquin River and Kings River. Mendota Pool extends over 5 miles up the San Joaquin River channel and over 10 miles into Fresno Slough and varies from less than one hundred to several hundred feet wide. Water depth varies but averages about 4 feet due to siltation. Mendota Pool contains approximately 8,000 AF of water and has a surface area of approximately 2,000 acres when full. It is the largest body of ponded water on the San Joaquin Valley basin floor.

Water quality conditions in the Mendota Pool depend on inflows from the DMC, groundwater pumped into Mendota Pool from local wells and, to a limited extent, San Joaquin River inflows (Figure 3-2). Water quality in the San Joaquin River varies considerably along the river's length. Between Friant Dam and the Mendota Pool, the quality of water is generally excellent. Total Dissolved Solids (TDS) < 50 micrograms per liter (mg/L). During the irrigation season, most of the water in the Mendota Pool is imported from the Delta via the DMC. This water has higher concentrations of TDS (TDS > 300 mg/L).

An additional source of water into Mendota Pool comes from adjacent land owners pumping groundwater into Mendota Pool and taking delivery from it off the SLC via an exchange with Reclamation, at convenient timing (but within 30 days of pumping in) and at differing water quality.

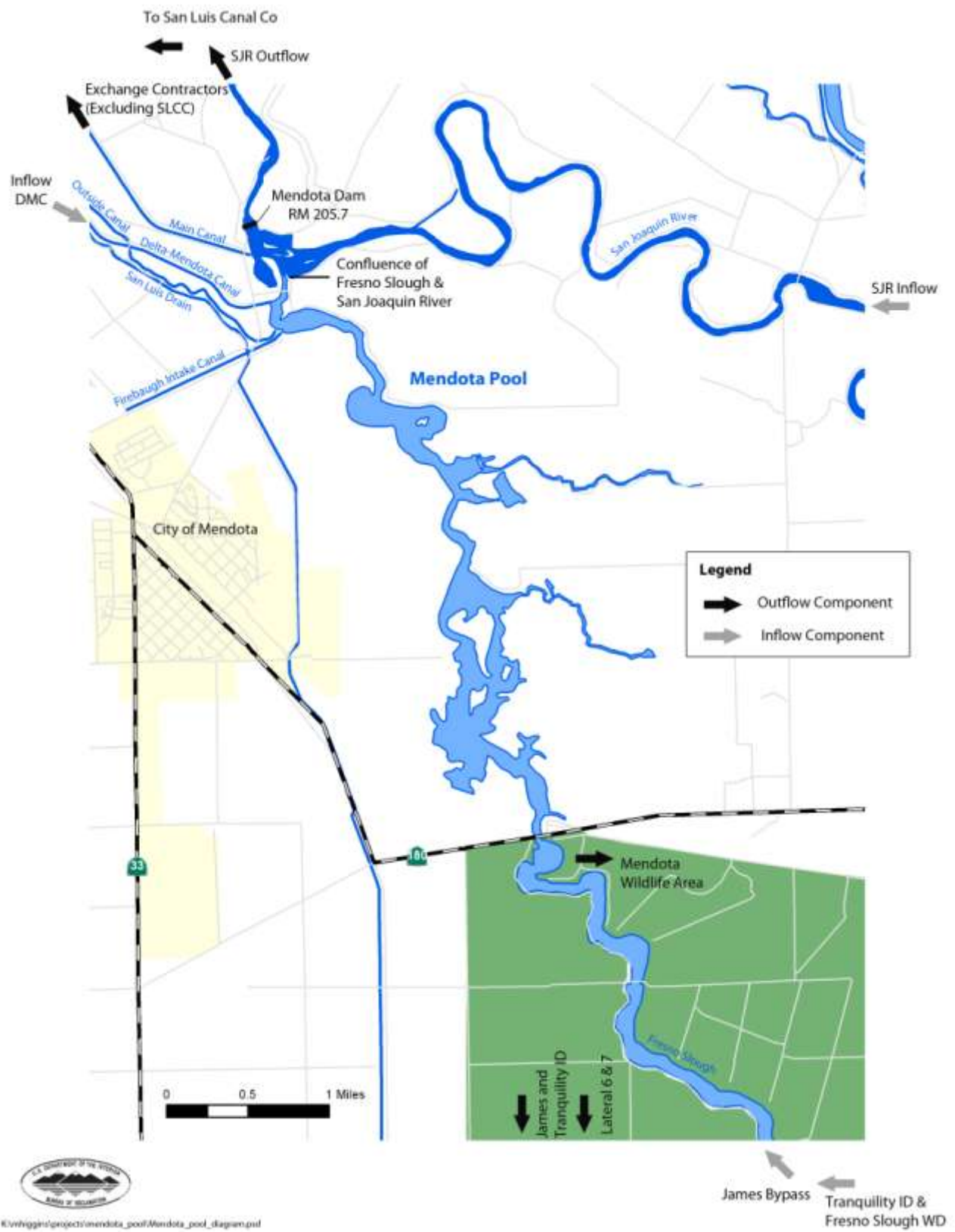


Figure 3-2 Mendota Pool

Groundwater Resources

Two primary hydrologic divisions of the San Joaquin Valley are agreed upon by DWR, the State Board, and the U.S. Geological Survey: 1) the San Joaquin River Hydrologic Region covering approximately 15,200 square miles 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; and 2) the Tulare Lake Hydrologic Region covering approximately 17,000 square miles and includes all of Kings and Tulare counties and most of Fresno and Kern counties (DWR 2003).

Groundwater quality conditions vary throughout the San Joaquin River Hydrologic Region. Salinity (expressed as TDS), boron, nitrates, arsenic, selenium, and mercury are parameters of concern for agricultural and municipal uses throughout the region. Of particular concern on the west side are TDS and selenium.

Groundwater zones commonly used along a portion of the western margin of the San Joaquin Valley have high concentrations of TDS, ranging from 500 milligrams per liter (mg/L) to greater than 2,000 mg/L (Bertoldi et al. 1991). The concentrations in excess of 2,000 mg/L commonly occur above the Corcoran Clay layer. These high levels have impaired groundwater for irrigation and municipal uses in the western portion of the San Joaquin Valley.

High selenium concentrations in soils of the west side of the San Joaquin River Hydrologic Region are of concern because of their potential to leach from the soil by subsurface irrigation return flow into the groundwater and into receiving surface waters. Selenium concentrations in shallow groundwater along the west side have been highest in the central and southern area south of Los Banos and Mendota with median concentrations of 10,000 to 11,000 micrograms per liter (Bertoldi et al. 1991).

According to DWR Bulletin 118 (2003), groundwater provides approximately 30 percent of the total supply for the San Joaquin River Hydrologic Region. However, the amount of groundwater use within the region varies widely, both between different areas and from one year to the next. All of the sub-basins within the San Joaquin River Hydrologic Region have experienced some overdraft (DWR 2003).

In the southern region of the San Joaquin Valley, several conjunctive use projects are operating or are in proposal stages. The purposes of each project vary and include recharge of overdrafted basins using purchased surface water, cooperative banking concepts that rely on groundwater in dry years and surface water in wet years, and temporary storage of surface water entitlements for later withdrawal.

The western San Joaquin Valley region has drainage problems caused by shallow clay layers of low permeability that limit recharge to groundwater. In addition, elevated concentrations of salinity, selenium, and boron exist in the semi-perched aquifer zone due to leaching from naturally occurring saline deposits from the Coast Range and from accumulated salts in the root zones of irrigated cropland. The San Joaquin Valley Drainage Program, established in 1984, published its recommendations for managing the drainage problem in 1990 (SJVDP 1990), culminating in a Memorandum of Understanding (MOU) in 1991 that allows Federal and State agencies to coordinate activities for implementing the plan. East of the San Joaquin River, the

valley is underlain by older sediments. The shallow groundwater quality is generally very good in this portion of the valley.

In the areas west of the San Joaquin River, unconfined groundwater generally flows from the southwest toward the northeast, although groundwater pumping and irrigation complicates and changes local flow directions with time. Aquifer response to pumping and irrigation is relatively rapid, resulting in local changes in groundwater flow direction as associated temporary cones of depression and recharge mounds form and dissipate.

AB 3030 (California Water Code Section 10750 et seq.) allows certain defined existing local agencies to develop a groundwater management plan in groundwater basins defined in DWR Bulletin 118. The groundwater management plan applies to groundwater usage by the Exchange Contractors. This act establishes a voluntary program whereby local water agencies may establish programs for managing their groundwater resources. The Exchange Contractors adopted a Groundwater Management Plan in October 1997 (Exchange Contractors 1997). The plan commits the Exchange Contractors to keeping records of groundwater pumping and conducting periodic monitoring of groundwater levels and quality throughout their service area.

Fresno County regulates the extraction and transfer of groundwater within the county under Title 14, Chapter 3 of the Fresno County Ordinance Code. Fresno County and the Exchange Contractors have an MOU that exempts the Exchange Contractors from regulation of groundwater resources within Fresno County. Fresno County recognizes that the Exchange Contractors' management, protection, and control of groundwater resources are consistent with Title 14, Chapter 3; therefore, the MOU exempts the Exchange Contractors from this code requirement (Fresno County and Exchange Contractors 2001).

The calculated change in groundwater storage, illustrated in Table 3-3, shows an average annual decrease of 3,546 AF over the 10-year period, representing approximately 0.31 percent of the total average yearly inflow of over 1,000,000 AF. It should be noted that the change in groundwater storage is not directly measured. It is calculated from the differences in groundwater elevations measured in a network of wells. Thus, the value must be considered an approximation. In this context, a difference of 0.31 percent is within the potential error in the calculation.

Table 3-3 Groundwater Balance in the Exchange Contractors Service Area 1993-2002

Year	Total Inflows (AF)	Total Outflows (AF)	Groundwater Pumping (AF)	Change in Groundwater Storage (AF)
1993	1,205,765	1,236,292	136,388	-30,527
1994*	941,575	1,151,158	225,750	-209,580
1995	1,234,440	1,190,328	102,796	44,112
1996	1,301,032	1,201,994	121,050	99,038
1997	1,153,560	1,195,461	126,047	-49,242
1998	1,339,253	1,243,397	37,686	111,198
1999	959,686	1,090,646	99,964	-86,992
2000	1,102,669	1,081,140	120,738	40,622
2001	1,084,402	1,074,070	134,212	6,105
2002	1,008,553	1,067,654	175,894	39,808
Average 1993-2002	1,133,094	1,153,214	128,053	-3,546
Source: Exchange Contractors 2003.				
*Critically dry year (Reclamation 2004)				

The long-term hydrographic record for the Exchange Contractors' service area was reviewed by Schmidt (CCID 1997). Schmidt's review shows that groundwater is in balance or is rising.

Regional Groundwater Monitoring Programs Several monitoring programs are currently occurring in the vicinity of the Proposed Action. These monitoring programs are being undertaken by Reclamation, Central Valley Regional Water Quality Control Board, U.S. Geological Survey, California Department of Fish and Game (CDFG), SLDMWA, Westlands Water District (WWD), Tulare Irrigation District, and James Irrigation District. A brief summary of these monitoring programs is provided in this section. In addition, several counties have adopted groundwater management plans and/or ordinances (see Table 3-4) [Central Valley Regional Water Quality Control Board 2009].

Most groundwater management ordinances restrict out-of-county groundwater uses. Some groundwater management plans specify trigger levels for groundwater levels in the Subbasin management objectives (BMOs) to prevent overdraft or other water quality problems. However, in many cases, there are no mechanisms to address the non-compliance with the BMOs. The current groundwater ordinances, AB 3030 groundwater management plans, and local BMO activities, which were intended for localized groundwater management, appear not to be well suited for implementing regional groundwater management. These limitations can hinder the effectiveness of conjunctive management in the State (DWR 2009).

Table 3-4 Groundwater Basins, Ordinances, and Districts

County	Subbasin Name	Ordinance	Districts overlying County & Subbasin
SAN JOAQUIN VALLEY HYDROLOGIC BASIN			
Madera	Madera Subbasin ² , Chowchilla Subbasin, Delta-Mendota ³	Yes. Title 13, Water and Sewers, 13.100.050, Ord. 573B § 1(part), 2001. ¹ Requires permit to export groundwater.	None but Delta-Mendota also underlies Fresno, Stanislaus, and Merced Counties. So, there is a connection.
Fresno	Delta-Mendota ³	Yes.	San Luis WD, Panoche WD
San Joaquin	Tracy Subbasin ⁴	Yes.	Byron Bethany ID, West Stanislaus ID, Banta Carbona ID, Del Puerto WD
Stanislaus	Delta-Mendota ³	Groundwater management Plan	West Stanislaus ID, Del Puerto WD
Merced	Delta Mendota ³	No.	Del Puerto WD, San Luis WD, Pacheco WD, Panoche WD
TULARE LAKE BASIN HYDROLOGIC REGION			
Kings	Tulare Lake Subbasin ⁵	No.	Westlands DD #1
Fresno	Madera Subbasin ²	No.	San Luis WD, Panoche WD, Pacheco WD, Mercy Springs WD, Westlands DD #1
SACRAMENTO VALLEY GROUNDWATER BASIN			
Contra Costa	Solano Subbasin	No.	Northwestern part of Byron Bethany ID
¹ Madera County 2009. ² Madera County has adopted an ordinance to provide regulatory control over exporting of groundwater, groundwater banking, and importing of groundwater for the purpose of groundwater banking. ³ Fresno County has a Groundwater Management Ordinance restricting the extraction and transfer of groundwater outside of the County. It requires that the groundwater resources of Fresno County be protected from harm resulting from extraction and transfer of groundwater for use on lands outside the county and consequential transfer of surface water outside of the county due to extraction. A County-issued permit is required for groundwater transfer, directly or indirectly, outside of the County, unless the action is exempted or a permit first obtained. ⁴ San Joaquin County adopted a groundwater management ordinance in 1996 and an amendment in 2000, regarding extraction and exportation of groundwater from San Joaquin County. The ordinance requires that a permit be obtained for use of extracted groundwater outside the County boundaries. ⁵ There are no known pertinent ordinances or regulations that affect groundwater in the Tulare Lake Subbasin.			

The SLDMWA adopted an AB3030 Northern groundwater management plan. The plan participants are composed of the Byron Bethany ID, Banta-Carbona ID, City of Tracy, Del Puerto WD, Patterson WD, San Joaquin County Flood Control & Water Conservation District, West Side Irrigation District (ID), and West Stanislaus ID. SLDMWA also prepared a Groundwater Management Plan for the Southern Agencies in the Delta-Mendota Canal Service Area and the following districts are participants: Pacheco WD, Panoche WD, Eagle Field WD, Oro Loma WD, Widren WD, Mercy Springs WD, Broadview WD and San Luis WD.

The groundwater pumping under the Groundwater Pump-in Program for the last 10 years (Table 3-5) shows that groundwater pumping has increased substantially beginning with drought year 2008. It also correlates with the Delta pumping curtailments that began in 2007 in response to Federal Judge Oliver Wanger's Delta Smelt Interim Remedy Order.

Table 3-5 Past Groundwater Pumping Under the Groundwater Pump-in Program

CVP District	2011*	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
BCID	0	817	2,756	1,273	0	0	0	0	0	0	0
BBID	0	0	1,038	0	0	0	0	0	0	0	0
DPWD	0	1,871	7,061	2,029	0	0	0	100	0	0	123
MSWD	0	0	6,584	0	0	0	0	0	0	0	0
Pacheco	0	0	4,370	0	0	0	0	0	0	0	0
Panoche	5104	8,199	5,663	7,184	744	0	0	0	0	0	0
SLWD	874	2,392	5,040	2,909	999	0	0	660	765	2766	3048
WSID	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5978	13,279	32,512	13,395	1,743	0	0	760	765	2766	3,171
10-YR Total											74,369
Data based on contract year (March through February) deliveries Non-CVP pumped quantities are in AF *2011 data retrieved through December 2011											

Sump Monitoring Reclamation operates six sumps located beside the DMC between Russell Avenue at MP 97.68 and Washoe Avenue at MP 110.12. The sumps drain adjacent farmland and this water has been pumped into the canal since 1952. Though the volume is very low (less than 2 cfs), the water in each sump contains toxic concentrations of selenium. Reclamation has been monitoring each sump since 1987. Since 1998, the sumps have been sampled twice yearly for boron and mercury. Selenium and electrical conductivity are measured weekly in all six sumps. In 2009, Reclamation committed \$500,000 for the design and construction of a pipeline to connect the sumps and end their discharge into the canal. Reclamation is in negotiations with Panoche Drainage District to treat and dispose of the sump water.

Selenium Monitoring A selenium monitoring program was initiated in July 2002. Daily composite samples of water are measured for selenium and TDS using autosamplers at three locations along the DMC and at the head of the CCID Main Canal.

Drinking Water Quality A fourth program was initiated in November 2002 at the request of the California Department of Health Services. Reclamation collects monthly samples from the DMC at McCabe Road near Check 13. The samples are analyzed for many constituents including alkalinity, total organic carbon, and coliforms.

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, no Exchange Agreements or Warren Act contracts would be issued to any San Luis Unit or Delta Division contractor. No groundwater would be pumped into the DMC. The DMC would continue to be used to provide CVP water to CVP contractors. Under the No Action Alternative, there would be no change to CVP facilities and operations. Under the No Action Alternative, water districts could continue to pump groundwater to irrigate adjacent crops. Effects from groundwater overdraft would continue.

Proposed Action

Surface Water: The Proposed Action would allow groundwater to be conveyed and stored in CVP facilities when excess capacity is available. This would allow the ground water to be delivered to other areas to supplement diminished CVP water supplies in 2012 and 2013. No new facilities would be constructed as part of the Proposed Action; however, facilities constructed during the timeframe of this analysis could be included in exchanges and Warren Act contracts within the scope of this analysis. Construction of such facilities would be subject to separate environmental analysis. The Proposed Action would not interfere with the normal operations of DMC nor would it impede any SWP or CVP obligations to deliver water to other contractors or to local fish and wildlife habitat. Furthermore, the Proposed Action would not interfere in the quantity or timing of diversions from the Sacramento-San Joaquin Bay Delta. CVP operations and facilities would not vary considerably under either alternative. Because the DMC and Mendota Pool are sources from which the Exchange Contractors divert water, they would be monitoring the water quality at Mendota Pool.

Groundwater: The total quantity of groundwater that can be pumped into the DMC under the Proposed Action would be limited to 50,000 AF, and that quantity would be divided among the San Luis Unit and Delta Division contractors listed in Table 2-1. However, each district would be limited to pumping a quantity below the "safe yield" as established in the local groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts. Safe yield is defined as the amount of groundwater that can be continuously withdrawn from a basin without adverse impact. The amount of water pumped into the DMC would be credited to that district. The quantity of groundwater pumped into the DMC by a district would then be delivered back into the district and used for irrigation purposes throughout the originating district. Some of the water used for irrigation would be used up by evapotranspiration and some would also seep back into the ground.

Additionally, water in each well must meet water quality standards prior to approval for conveyance, and the monitoring of groundwater quality would continue throughout the contract year. If a well to be used for pumping water into the DMC does not meet the water quality standards, the district could not pump water from that well into the DMC. The 2012 Monitoring Plan provides for routine testing of each well by Reclamation and SLDMWA to confirm that the groundwater still meets standards. The contract also allows the Contracting Officer to stop a well that fails to meet standards. Reclamation and SLDMWA staff would monitor salinity in the canal to identify degradation caused by the groundwater, and would work with the SLDMWA and districts to modify or restrict pumping to improve water quality. The groundwater monitoring implemented as part of the Proposed Action would provide specific and detailed information about the effects of groundwater pumping in the area.

These findings indicate that there would be no adverse impact to water resources resulting from the Proposed Action.

Cumulative Impacts

Because the Proposed Action would not involve construction or modification or interfere with operations, there would be no cumulative impacts to existing facilities or other contractors. Construction of a pipeline involving the Mercy Springs Water District has been proposed; however, details are not known at this time and the Proposed Action would be subject to separate environmental analysis. Because pumping would be restricted to below the safe yield, there would not be cumulative impacts to groundwater. Because groundwater quality would be monitored throughout the year, there would be no cumulative impacts to water quality involving water delivered through the DMC.

3.2 Geologic Resources

3.2.1 Affected Environment

Regional Subsidence

Land subsidence in the San Joaquin Valley has been studied extensively in the past by the USGS and DWR. A State-Federal committee on subsidence was formed in the early 1950's that measured subsidence until 1970. By 1970, 5,200 square miles in the San Joaquin Valley had subsided more than 1 foot. Between 1926 and 1970, a maximum of 29.7 feet of subsidence was measured at a point southwest of Mendota. The compacting forces caused by groundwater level decline squeezed more than 15.6 million AF of water out of San Joaquin Valley sediments during the same period.

There are two types of land subsidence due to withdrawal of groundwater resources; elastic and inelastic. Elastic subsidence is not permanent and is largely reversible, if water levels recover to above historic low levels. Inelastic subsidence is permanent and occurs when water is removed from a confined aquifer for the first time, and is sometimes referred to as virgin subsidence. Between the mid-1920's to about 1980 the San Joaquin Valley experienced inelastic, non-recoverable subsidence.

The most recent reports on land subsidence in the San Joaquin Valley were completed by R.L. Ireland of the USGS in 1986 and Arvey A. Swanson of DWR in 1995. Ireland (1986) states that *"Land subsidence to groundwater withdrawal in the San Joaquin Valley that began in the mid-1920's and reached a maximum of 29.7 feet in 1981 has been halted by the importation of surface water through major canals and the California Aqueduct in the 1950's through 1970's."* This was evident because large scale regional subsidence had halted, but smaller-scale local subsidence continued in many areas.

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, no Exchange Agreements or Warren Act contracts would be issued. No groundwater would be pumped into the DMC; however, water districts could continue to pump groundwater to irrigate adjacent crops potentially contributing to overdraft.

Proposed Action

The 2012 Monitoring Plan (Appendix A) includes measures to ensure that overdraft and resulting subsidence does not occur from the Proposed Action. Measures include:

- All districts participating in the 2012 DMC Pump-in Program must provide the depth to groundwater in every well before pumping into the DMC commences;
- Though most of the wells are privately owned, the Districts must provide access to each well for Reclamation and Authority staff;
- All compliance monitoring data collected by the Authority would be entered into worksheets and presented each week to Reclamation via e-mail. Reclamation would review the data to identify potential changes in the local aquifer that could lead to overdraft or subsidence;
- Groundwater measurements have been collected by the Authority since May 1995. The current depth to groundwater in each well would be compared to the measured depths. If the current depth exceeds the maximum measured depth, Reclamation would recommend that the District stop pumping from that well until the depth of water recovers to an agreed depth, such as the median observed depth.

These measures would ensure that overdraft and resulting subsidence does not occur from the Proposed Action.

Cumulative Impacts

Cumulative impacts resulting in overdraft and/or subsidence would be avoided because pumping would cease if current depth to groundwater exceeds the maximum measured depth.

3.3 Land Use

3.3.1 Affected Environment

Land use is primarily agricultural due in large part to the construction of the DMC in the 1950s which sparked major development of farmland in the San Joaquin Valley. Urban development has been concentrated along the Interstate 5 corridor including the cities of Tracy and Patterson and along the State Route 152 corridor including the cities of Los Banos and Santa Nella.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, no Exchange Agreements or Warren Act contracts would be issued that would allow this Non-project water to be conveyed and stored in CVP facilities. In the event of a dry year, there could be some adverse impacts to crops if supplemental supplies of water are not found. According to SLDMWA (Mizuno personal communication 2009), under the No Action Alternative, an estimated total of 30,000 acres (DPWD – 11,000 acres, SLWD – 8,000 acres, and Panoche – 11,000 acres) of additional land could be fallowed.

Proposed Action

There would be no impacts to land use resulting from the Proposed Action. The Proposed Action would utilize CVP water to help district agricultural lands remain in production, and to convey Non-project water to other receiving areas to support existing farmlands and minimize the potential for fallowing agricultural land. No new lands would be cultivated with this water.

The conveyance of the Non-project water through CVP facilities would not contribute to changes in land use. The Proposed Action would not increase or decrease water supplies that would result in development.

Cumulative Impacts

No new facilities would be constructed as part of the Proposed Action; however, facilities constructed during the timeframe of this analysis could be included in exchanges and Warren Act contracts within the scope of this analysis. Construction of such facilities would be subject to separate environmental analysis. The Proposed Action supports current land use.

3.4 Biological Resources

3.4.1 Affected Environment

Central Valley Refuges

Section 3406(d) of the CVPIA requires the Secretary of Interior to provide reliable year-round water supplies of suitable quality, meeting peak seasonal needs, to maintain and improve wetland habitat areas on certain refuges in the Central Valley of California in the National Wildlife Refuge System, State wildlife management areas, and Grassland Resource Conservation District. These refuges include Mendota Wildlife Area (WA) which is located in the San Joaquin Valley, 30 miles west of Fresno, California. Under normal operating conditions, water is delivered to Mendota WA via gravity flow and pumping from Mendota Pool at Fresno Slough. The quantity, quality, and timing of water deliveries to refuges identified in CVPIA are in accordance with parameters specified in Reclamation's Report on Refuge Water Supply Investigations, Central Valley Hydrologic Basin, California and the San Joaquin Basin Action Plan/Kesterson Mitigation Action Plan Report, which were incorporated by reference into CVPIA. The reports specified Level 2 and Level 4 water supplies:

- Level 2 water supply is identified as a firm, average historical annual water supply required to manage for minimal wetlands maintenance and wildlife habitat development. Level 2 water generally comes from CVP yield.
- Level 4 water supply is identified as the amount of water required to manage for optimal wetlands and wildlife habitat development.

At 12,425 acres, Mendota WA is the largest publicly owned and managed wetland in the San Joaquin Valley. Established between 1954 and 1966, the wildlife area is adjacent to Fresno Slough and the 900-acre Alkali Sink Ecological Reserve. Approximately 8,300 acres of wetlands are maintained at Mendota WA, including almost 6,800 acres of seasonal wetlands. Mendota WA is owned and managed by CDFG.

To implement the refuge water supply provisions of CVPIA, Reclamation entered into a contract, titled "Contract Between the United States and State of California for Water Supply to Los Banos, Volta, North Grasslands and Mendota Wildlife Areas, January 19, 2001" otherwise referred to as "Water Supply Contract", with the CDFG providing for firm CVP water deliveries to the wildlife areas owned/managed by CDFG within the San Joaquin Basin. Consistent with the Water Supply Contract, the following is the breakout for Level 2 and incremental level allocations from the total Full Level 4 water allocation of 29,650 AF for Mendota WA:

- Level 2 = 27,594 AF/y
- Incremental Level 4 = 2,056 AF/y

CVP water is typically conveyed to Mendota WA using the DMC and Mendota Pool. Mendota Pool floods a portion of San Joaquin River and Fresno Slough. Water is subsequently pumped from Fresno Slough to Mendota WA and also conveyed from Fresno Slough to Mendota WA by gravity flows. Mendota WA is dependent on gravity flows from Fresno Slough to provide water deliveries to approximately 3,000 acres of wetlands adjacent to both the west and east sides of the slough. Fresno Slough is allowed to backflow (gravity flow) through certain water control structures onto Mendota WA. Currently, there are no other existing means to facilitate water delivery to those specific 3,000 wetland acres. Mendota WA is also dependent on adequate water level at Fresno Slough to facilitate pumping that serves many areas of Mendota WA as well.

Detailed baseline habitat information was provided in EA/FONSI-08-98, *Approval of One-Year Temporary Warren Act Contracts for the Conveyance of Non-CVP Water in the Delta-Mendota Canal*, EA-08-98, February, 27, 2009 and is hereby incorporated by reference. That information will not be repeated here. The habitats associated with the Proposed Action area include non-native grassland, agricultural, valley foothill riparian, alkali desert scrub, ruderal, and freshwater emergent wetlands.

The following list (Table 3-6) was obtained on February 16, 2012, by accessing the USFWS Database (Document Number 120216063459). The list is for the following USGS quadrangles, which overlapped the districts in the San Luis Unit and Delta Division: Broadview Farms, Charleston School, Chounet Ranch, Crows Landing, Dos Palos, Hammonds Ranch, Howard Ranch, Laguna Seca Ranch, Los Banos, Los Banos Valley, Newman, Orestimba Peak, Ortigalita Peak NW, Oxalis, Patterson, San Luis Dam, Solyo, Tracy, Vernalis, Volta, and Westley. Reclamation also queried the California Natural Diversity Database (CNDDB), and combined the USFWS and CNDDB information with information in Reclamation's files to create the table.

Table 3-6 Threatened and Endangered Species List

Species	Status	Habitat	*Occurrence in the Study Area
PLANTS			
Large-flowered fiddleneck (<i>Amsickia grandiflora</i>) Critical habitat	FE, CE	Cismontane woodland, valley and foothill grassland in various soils.	Possible. In undisturbed areas of San Joaquin County.
San Joaquin woolly-threads (<i>Monolopia congdonii</i>)	FE	Chenopod scrub, valley and foothill grasslands. This species is found only in the southern San Joaquin Valley and surrounding hills. It grows on neutral to subalkaline soils. On the San Joaquin Valley floor, it typically is found on sandy or sandy loam soils.	Present. CNDDB records indicate extant populations occur within Fresno County.
INVERTEBRATES			
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>) Critical habitat	FE	The vernal pool tadpole shrimp is currently distributed across the Central Valley of California and in the San Francisco Bay area. Inhabits highly turbid vernal pools.	Present. Vernal pool habitats within the study area may support populations of this species. CNDDB records indicate that this species is presumed extant.

Species	Status	Habitat	*Occurrence in the Study Area
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>) Critical habitat	FT	Primarily found in vernal pools, may use other seasonal wetlands.	Present. Although very little remains of the vast acreages of vernal pool habitat that once occurred in the region, some vernal pool habitats are still present. CNDDDB records indicate that this species is presumed extant in Stanislaus, Contra Costa, and San Joaquin Counties.
Longhorn fairy shrimp (<i>Branchinecta longiantenna</i>) Critical habitat	FE	Endemic to the eastern margin of the central coast mountains in vernal pools.	Present. Vernal pool habitats within the study area may support populations of this species. CNDDDB records indicate that this species is presumed extant.
Conservancy fairy shrimp (<i>Branchinecta conservatio</i>) Critical habitat	FE	Vernal pool habitats. The species is currently known from several disjunct populations: the Vina Plains in Tehama County, south of Chico in Butte County, the Jepson Prairie Preserve and surrounding area in Solano County, Sacramento National Wildlife Refuge in Glenn County, Mapes Ranch west of Modesto, San Luis National Wildlife Refuge and the Haystack Mountain/Yosemite Lake area in Merced County, and two locations on the Los Padres National Forest in Ventura County.	Present. Vernal pool habitats within the study area may support populations of this species. CNDDDB records indicate that this species is presumed extant.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Lives in elderberry shrubs of California's Central Valley and Sierra Foothills with stems one inch or greater in diameter at ground level.	Present. The host plant for this species is common throughout the region. CNDDDB records indicate that this species is presumed extant.
FISH			
Southern Distinct Population of North American green sturgeon (<i>Acipenser medirostris</i>)	FT	Anadromous and highly marine-oriented; spawns mainly in Sacramento River. No evidence of occurrence in San Joaquin River system. Juveniles salvaged in South Delta pumping plants in summer.	Absent. No natural waterways within the species' range would be affected by the Proposed Action.
Delta smelt (<i>Hypomesus transpacificus</i>)	FT, CE	Endemic to the Delta. Found in San Joaquin River up to Mossdale in some years and in Sacramento River up to Rio Vista where salinity is 2-7 ppt.	Absent. No natural waterways within the species' range would be affected by the Proposed Action.
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	FT	Anadromous species; spawns in cold waters.	Absent. No natural waterways within the species' range would be affected by the Proposed Action.
Chinook salmon – Central Valley spring-run (<i>Oncorhynchus tshawytscha</i>)	FT, CT	Anadromous species; spawns in cold waters.	Absent. No natural waterways within the species' range would be affected by the Proposed Action.

Species	Status	Habitat	*Occurrence in the Study Area
Chinook salmon Sacramento River winter-run (<i>Oncorhynchus tshawytscha</i>)	FE, CE	Anadromous species; spawns in cold waters.	Absent. No natural waterways within the species' range would be affected by the Proposed Action.
AMPHIBIANS			
California tiger salamander (<i>Ambystoma californiense</i>) Critical habitat	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	Possible. Suitable breeding habitats in the form of vernal pools and stockponds occur in the region. Rodent burrows are common along the fringes of agricultural areas.
California red-legged frog (<i>Rana draytonii</i>)	FE, CSC	Red-legged frogs require aquatic habitat for breeding but also use a variety of other habitat types including riparian and upland areas. Adults often utilize dense, shrubby or emergent vegetation closely associated with deep-water pools with fringes of cattails and dense stands of overhanging vegetation such as willows.	Present. Documented as extant within the project area.
REPTILES			
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	FE, CE	Resident of sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. They seek cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrow.	Present. Documented as extant within Fresno County.
Giant garter snake (<i>Thamnophis gigas</i>)	FT, CT	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Possible. Documented as extant within Fresno, Merced and San Joaquin Counties.
BIRDS			
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	FE, CE	Neotropical migrant that nests in parts of California; uses riparian areas with a dense understory and will forage up to 300' away in upland areas	Unlikely. Has been detected in recent years on the San Joaquin River National Wildlife Refuge west of Modesto.
MAMMALS			
Riparian woodrat (<i>Neotoma fuscipes riparia</i>)	Riparian woodrat (<i>Neotoma fuscipes riparia</i>)	Riparian woodrat (<i>Neotoma fuscipes riparia</i>)	Riparian woodrat (<i>Neotoma fuscipes riparia</i>)
Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)

Species	Status	Habitat	*Occurrence in the Study Area
Giant kangaroo rat (<i>Dipodomys ingens</i>)	FE, CE	San Joaquin River Annual grassland on gentle slopes of generally less than 100, with friable, sandy-loam soils. However, most remaining populations are on poorer, marginal habitats which include shrub communities on a variety of soil types and on slopes up to about 22°.	Possible. Some suitable habitats may be present in the southern portion of the study area.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	FE, CT	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Present. CNDDB records indicate that this species is presumed extant in Fresno, Merced, Stanislaus and San Joaquin Counties.
Fresno kangaroo rat (<i>Dipodomys nitratoideus exilis</i>)	FE, CE	Prefers arid, alkaline plains with sparse vegetation, where it consumes seeds of annuals and shrubs, including saltbush. There are no known populations within the circumscribed historical geographic range in Merced, Madera, and Fresno Counties. A single male Fresno kangaroo rat was captured twice in autumn 1992 on the Alkali Sink Ecological Reserve, west of Fresno.	Unlikely. The study area occupies part of this species historical range. However, the most likely areas that the species might still occur are the Alkali Sink Ecological Reserve, Madera Ranch, and some nearby areas of privately owned lands, which are outside of the Proposed Action Area.
*Adapted from CNDDB, 2009 and USFWS list for project area USGS quadrangles. Definitions of Occurrence Indicators: Present: Species observed on the study area at time of field surveys or during recent past. Likely: Species not observed on the study area, but it may reasonably be expected to occur there on a regular basis. Possible: Species not observed on the study area, but it could occur there from time to time. Unlikely: Species not observed on the study area, and would not be expected to occur there except, perhaps, as a transient. Absent: Species not observed on the study area, and precluded from occurring there because habitat requirements not met. Listing Status Codes: FE: Federally Endangered FT: Federally Threatened FD: Federally Delisted CE: State Endangered CT: State Threatened			

Federally Listed Species

Giant Garter Snake USFWS published a proposal to list the giant garter snake as an endangered species on December 27, 1991 (USFWS 1991) (56 FR 67046). The Service reevaluated the status of the snake before adopting the final rule, which was listed as a threatened species on October 20, 1993 (USFWS 1993) (58 FR 54053).

Endemic to wetlands in the Sacramento and San Joaquin valleys, the giant garter snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals, rice fields and the adjacent uplands (USFWS 1999).

Giant garter snakes formerly occurred throughout the wetlands that were extensive and widely distributed in the Sacramento and San Joaquin Valley floors of California (Fitch 1940; Hansen

and Brode 1980; Rossman and Stewart 1987). The historical range of the snake is believed to have extended from the vicinity of Chico, in Butte County, southward to Buena Vista Lake, near Bakersfield, in Kern County (Fitch 1940; Fox 1948; Hansen and Brode 1980; Rossman and Stewart 1987). Early collecting localities of the giant garter snake coincide with the distribution of large flood basins, particularly riparian marsh or slough habitats and associated tributary streams (Hansen and Brode 1980). Loss of habitat due to wetlands reclamation, agricultural activities and flood control have extirpated the snake from the southern one third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lake beds (Hansen 1980; Hansen and Brode 1980).

Other Federally Listed Species Vernal pool tadpole shrimp, Vernal pool fairy shrimp, Longhorn fairy shrimp, and Conservancy fairy shrimp require vernal pool habitats. The host plant for the Valley elderberry longhorn beetle is common throughout the region.

California tiger salamander, California red-legged frog, and blunt-nosed leopard lizard, riparian woodrat, riparian brush rabbit, giant kangaroo and San Joaquin kit fox could potentially be within the Proposed Action area.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, this Non-project water would not be conveyed or stored in CVP facilities. There would be no impacts to biological resources since conditions would remain the same as existing conditions. Reclamation is unaware of any projects expected to occur within the time frame addressed in this EA that would impact these resources.

Proposed Action

There would be no impacts to biological resources as a result of the Proposed Action. Most of the habitat types required by species protected by the Endangered Species Act (ESA) do not occur in the Proposed Action area. The Proposed Action would not involve the conversion of any land fallowed and untilled for three or more years. The Proposed Action also would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or to birds protected by the Migratory Bird Treaty Act (MBTA). Due to the fact that the Exchange Agreements and/or Warren Act contracts related water would not reach streams containing listed fish species, there would be no effects to these species. No critical habitat occurs within the area affected by the Proposed Action and so none of the primary constituent elements of any critical habitat would be affected.

Potential effects to giant garter snakes would be expected only if the water quality parameters exceed concentrations or levels identified as toxic or of concern (e.g., CVRWQCB 1998; Reclamation 2004b; USFWS and NMFS 2000; USFWS 2008). Daily water quality monitoring, with the requirement of pumps ceasing if water quality objectives are exceeded, however, would avoid such effects to the species. A brief “lag time” between detection of the exceedance (and the resultant shutting down of pumps) and the subsequent reduction in contaminant concentration would be no more than a day or two and would not cause any adverse effect because of the extremely short duration before the water quality standards are returned to the target levels.

There would be no adverse effects to the giant garter snake due to groundwater overdraft, because of the restrictions in groundwater pumping for each district.

The requirement that no native lands be converted without consultation with USFWS, and the stringent requirements for water quality would preclude any impacts to wildlife, whether Federally listed or not.

Cumulative Impacts

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

3.5 Indian Sacred Sites

Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. “Sacred Sites” means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or Indian individual determined to be an appropriate authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion.

Both alternatives involve the conveyance of water through existing facilities for established agricultural and M&I uses. Under both the No Action and Proposed Action alternatives, neither restriction of access to nor adverse effects to the physical integrity of any sacred sites would occur. As such, there would be no direct, indirect, or cumulative impacts to Indian sacred sites as a result of either the No Action or Proposed Action alternatives.

3.6 Indian Trust Assets

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

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

3.6.1 Affected Environment

There are no tribes possessing legal property interests held in trust by the United States in the water involved with this action, nor is there such a property interest in the lands designated to receive the water proposed in this action.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative there would be no impacts to ITA as there are none in the study area.

Proposed Action

This action would have no adverse effect on ITA.

Cumulative Impacts

This action would have no adverse cumulative effect on ITA.

3.7 Environmental Justice

Executive Order 12898 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

3.7.1 Affected Environment

The population of some small communities typically increases during late summer harvest. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America.

3.7.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve of Exchange Agreements or Warren Act contracts under this Pump-in Program. The districts could continue to pump their groundwater; however, there could be a minor adverse affect to migrant workers if water shortages occur.

Proposed Action

Exchange Agreements and/or Warren Act contracts would allow the water districts to use their Non-project water for irrigation in their service area. The availability of this water could help maintain agricultural production and farm worker employment. Therefore implementing the Proposed Action would not cause any harm to minority or disadvantaged populations within the Proposed Action area.

Cumulative Impacts

There would be no adverse cumulative impacts to minority and low-income populations as a result of the Proposed Action.

3.8 Socioeconomic Resources

3.8.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the San Joaquin Valley. The CVP allocations allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. The economic variances may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel and power costs.

3.8.2 Environmental Consequences

No Action

Reclamation would not approve Exchange Agreements and/or Warren Act contracts to convey and store Non-project water in CVP facilities. Non-project water could still be pumped and distributed to other areas to supplement the diminished CVP water supply. However, this could increase costs to the districts to distribute to other areas. Demand for local labor and farm supplies would be reduced. Under the No Action Alternative, there could be temporary adverse impacts to socioeconomic resources due to potential fallowing of farmland. However, this could change with the hydrological conditions.

Proposed Action

Under the Proposed Action, participating districts could convey and store Non-project water in CVP facilities to supplement their CVP water supply. The Exchange Agreements and/or Warren Act contracts would allow the Non-project water to be distributed to sustain permanent crops. This could help maintain agriculture in this agricultural area.

Cumulative Impacts

There would be no adverse cumulative impacts to socioeconomic resources as a result of the Proposed Action. The Proposed Action could result in a stronger local agricultural economy during the program timeframe.

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation completed a draft Environmental Assessment/Finding of No Significant Impact which was made available for public review and comment between March 14, 2012 and April 14, 2012. No comments were received.

4.2 Fish and Wildlife Coordination Act (16 U.S.C. § 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 amendments enacted in 1946 require consultation with the Service and State fish and wildlife agencies “whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license”. Consultation is to be undertaken for the purpose of “preventing the loss of and damage to wildlife resources”.

The Proposed Action does not involve any new impoundment or diversion of waters, channel deepening, or other control or modification of a stream or body of water as described in the statute, but only the movement of Non-project water through existing CVP facilities. Therefore, the FWCA does not apply.

4.3 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, 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 Proposed Action would have no effect to threatened or endangered species or designated critical habitats, based on the lack of construction and the implementation of stringent water quality standards.

4.4 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 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 National Register. 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 National Register. 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.

No construction, new land use, or new ground disturbing activities would occur as a result of the Proposed Action. Therefore, the Proposed Action has no potential to affect historic properties (36 CFR 800.3(a)(1).

4.5 Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.)

The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act 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 Act, 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 would be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would have no effect on birds protected by the MBTA, based on the lack of construction and the implementation of stringent water quality standards.

4.6 Executive Order 11988 – Floodplain Management and Executive Order 11990 – Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands.

This action would not adversely affect floodplains or wetlands because it does not involve ground disturbance.

4.7 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 401 of the Clean Water Act [CWA] (33 U.S.C. § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 U.S.C. § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual U. S. Army Corps of Engineers dredge and fill discharge permit (Section 404) to first obtain certification from the state that the activity associated with dredging or filling would comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA are not required.

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