RECLAMATION

Managing Water in the West

Exchange Agreements and/or Warren Act Contracts for Conveyance of Groundwater in the Delta-Mendota Canal – Contract Years 2013 through 2023 (March 1, 2013 – February 29, 2024)

Final EA 12-061

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

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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.

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Section 1 Introduction

Reclamation proposes to issue a 5-year Exchange Agreement and/or 5-year Warren Act contract to requesting CVP contractors within the Delta Division and San Luis Unit. At the end of the 5-years, Reclamation could issue an additional 5-year Exchange Agreement and/or 5-year Warren Act contract to requesting CVP contractors within the Delta Division and San Luis Unit based on the 10-year environmental impact analysis covered under this EA. Reclamation circulated a Draft Environmental Assessment and Finding of No Significant Impact EA/FONSI 12-061 between November 13, 2012 and December 13, 2012. No comments were received. All changes to Draft EA/FONSI 12-061 are indicated by a vertical line in the left margin of this Final EA and the Final FONSI.

1.1 Background

The San Luis & Delta-Mendota Water Authority (SLDMWA), on behalf of eight of its member agencies, has requested approval of 5-year Exchange Agreements and/or Warren Act contracts to pump groundwater into the Delta-Mendota Canal (DMC) for delivery to contractors during the period of March 1, 2013 through February 29, 2024, (Contract Years 2013-2023). Approval of Exchange Agreements and/or Warren Act contracts for additional 5-years could be issued following an environmental review to ensure that the findings in this EA/FONSI remain valid.

The Warren Act (Act of February 21, 1911, CH. 141, (36 STAT. 925) authorizes 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. Over the past twenty-years, Reclamation has issued either annual or two-year Exchange Agreements and/or Warren Act contracts for groundwater pumping into the DMC and storage in San Luis Reservoir.

1.2 Need for the Proposed Action

California has experienced droughts that have reduced water supplies to many water districts. 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 percent in 2011. Operations of the Federal Jones Pumping Plant continue to be limited due to the various constraints on Delta operations, which reduce available CVP contract supplies. SOD CVP contractors thus need additional supplies to avoid shortages for their customers and foresee the continuation of the need for Exchange Agreements and/or Warren Act Contracts to convey and store pumped groundwater water into the DMC for supplemental water supplies.

1.3 Relevant Legal and Statutory Authorities

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 EA and include the following as amended, updated, and/or superseded (all of which are incorporated by reference):

- Central Valley Project Improvement Act-Central Valley Project Improvement Act of 1992, Title 34 (of Public Law 102-575), Section 3405(a), authorizes all individuals or districts who receive CVP water under water service or repayment contracts, water rights settlement contracts or exchange contracts to transfer, subject to certain terms and conditions, all or a portion of the water subject to such contract to any other California water users or water agency, State or Federal agency, Indian Tribe, or private non-profit organization for project purposes or any purpose recognized as beneficial under applicable State law.

- Central Valley Project Improvement Act of 1992, Title 34 (of Public Law 102-575), Section 3408(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-CVP 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).

  Reclamation completed the Final Programmatic Environmental Impact Statement (EIS) for the CVPIA in October 1999 that analyzed alternatives and implementation of the CVPIA. The Record of Decision (ROD) was signed in January 9, 2001.

- 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.

- Reclamation Project Act-Section 14 of the Reclamation Project Act of 1939 (53 Stat. 1197; 43 U.S.C., subsection 389) authorizes the Secretary, for the purpose of orderly and economical construction or operation and maintenance of any project, to enter into such contracts for exchange or replacement of water, water rights, or electric energy or for the adjustment of water rights, as in his judgment are necessary and in the interests of the United States and the project.

- 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-The Warren Act (Act of February 21, 1911; Chapter 141 (36 Stat. 925)) authorizes Reclamation to enter into contracts to impound, store, and/or convey Non-Project Water when excess capacity is available in federal facilities.

- Water Quality Standards-Reclamation requires that the operation and maintenance of CVP facilities shall be performed in such a manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in federal facilities by ensuring that imported non-CVP water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically. The water quality standards are the maximum concentration of certain contaminants that may occur in each source of non-CVP water. Monitoring standards also include measuring depth to groundwater to avoid localized impacts due to well drawdown. Water quality criteria for introduction of non-CVP water into the DMC are included in Appendix A titled the Delta-Mendota Canal and San Luis Canal Ten Year Groundwater Pump-in Program Water Quality Monitoring Plan.

- February 3, 2012 letter from the San Joaquin River Exchange Contractors.

- 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.

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 could potentially participate in this Proposed Action (Figure 1-1):

- Banta-Carbona Irrigation District (BCID)

- Byron Bethany Irrigation District (BBID)
- Del Puerto Water District (DPWD)
- Mercy Springs Water District (MSWD)
- Pacheco Water District (PWD)
- Panoche Water District (Panoche)
- San Luis Water District (SLWD)
- West Stanislaus Irrigation District (WSID)

The timeframe considered in this EA would be 10-years (Contract Years: 2013 through 2023) (Calendar Years: March 1, 2013 – February 29, 2024)

1.5 Resources of Potential Concern

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

- Water Resources
- Land Use
- Geology
- Biology
- Socioeconomics
- Air Quality
- Global Climate

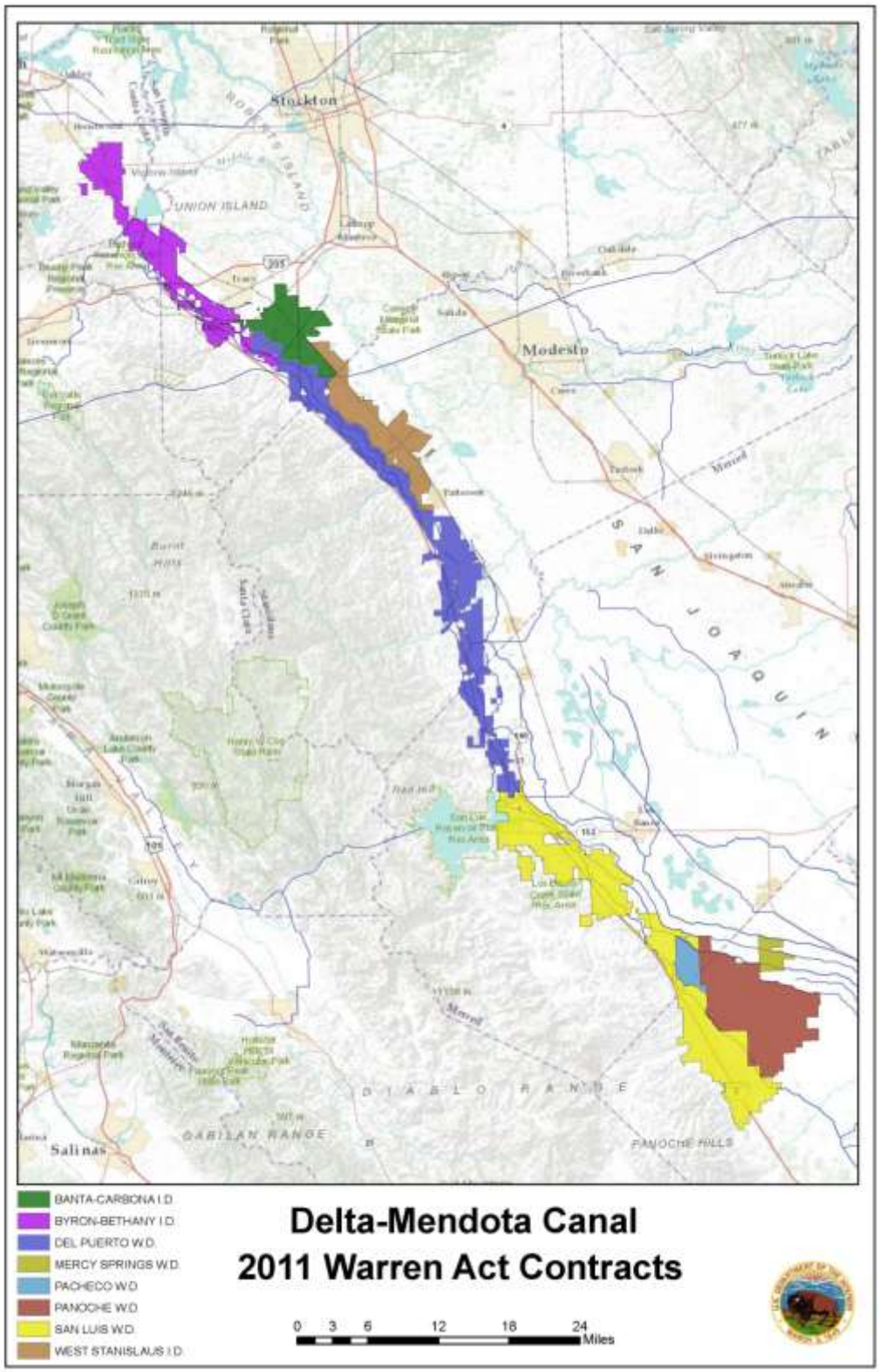

Figure 1-1 Participating Water Districts

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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

Reclamation would not issue two Five Year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract years. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued annual or 2-year contracts analyzed under annual or 2-year EAs.

2.2 Proposed Action

Reclamation proposes to issue a 5-year Exchange Agreement and/or 5-year Warren Act contract to requesting CVP contractors within the Delta Division and San Luis Unit. At the end of the 5-years, Reclamation could issue an additional 5-year Exchange Agreement and/or 5-year Warren Act contract to requesting CVP contractors within the Delta Division and San Luis Unit based on the 10-year environmental impact analysis covered under this EA. An environmental review to ensure that the findings in this EA/FONSI remain valid would be required prior to issuance of the second 5-year term. If the review finds that the findings are still valid, an additional 5-year contract could be issued not to exceed February 28, 2023 for pumping and conveyance and February 29, 2024 for storage in San Luis Reservoir (SLR) and conveyance from the SLR.

Reclamation has capped the Proposed Action at 50,000 acre-feet (AF) annually for all districts combined participating in the DMC Pump-in Program. The 50,000 AF would be allocated to the participants based on need. Conveyance and storage of Non-Project Water in CVP facilities would be subject to available capacity.

San Luis Water District (SLWD), Panoche Water District (Panoche) and Pacheco Water District (PWD) 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.

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 (Appendix A includes specific well information). The quantity of groundwater pumped into the DMC would be measured with flow-meters that would be read and calibrated by SLDMWA field staff. Participating districts intend to pump up to 10,000 AF of groundwater into the DMC. Although more than five Warren Act contracts may be executed,

conveyed amounts would not exceed a total combined amount of up to 50,000 AF. The district(s) would then convey a like amount through turnouts on either the DMC or the SLC to be delivered for agricultural use to water users within the districts (Figure 2-1).

In 1995, the SLDMWA grouped wells along the Lower DMC into four groups in order to manage the pump-in program. Groundwater pumping in Management Areas 2 and 3 (approximately between Mercy Springs Road and Russell Avenue), resulted in subsidence to the canal and local facilities. As such, pumping in those two areas has been excluded since 2008. In addition, pumping would be limited in the Los Banos Aquifer area (Management Area 1) due to changes in groundwater levels in the City of Los Banos wells due to local pumping of farm wells. A Los Banos area groundwater study was conducted in 2011 that would be used by Reclamation and the SLDMWA, in cooperation with the City and San Joaquin River Exchange Contractors Water Authority to prevent excessive changes in groundwater levels and subsidence.

All wells would be tested in accordance with the requirements described in the 2012 Delta-Mendota Canal Pump-in Program Water Quality Monitoring Plan (Appendix A).

New wells within the geographical coverage of this environmental analysis may be included in the program as long as they meet the water quality requirements specifically described in the 2012 Delta-Mendota Canal Pump-in Program Water Quality Monitoring Plan. Any construction involving ground disturbance would require separate environmental analysis. Note that addition of wells would not increase the 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 Water Quality Monitoring Program must be added by an Exhibit C amendment to the Warren Act Contract for the respective participant District prior to pumping.

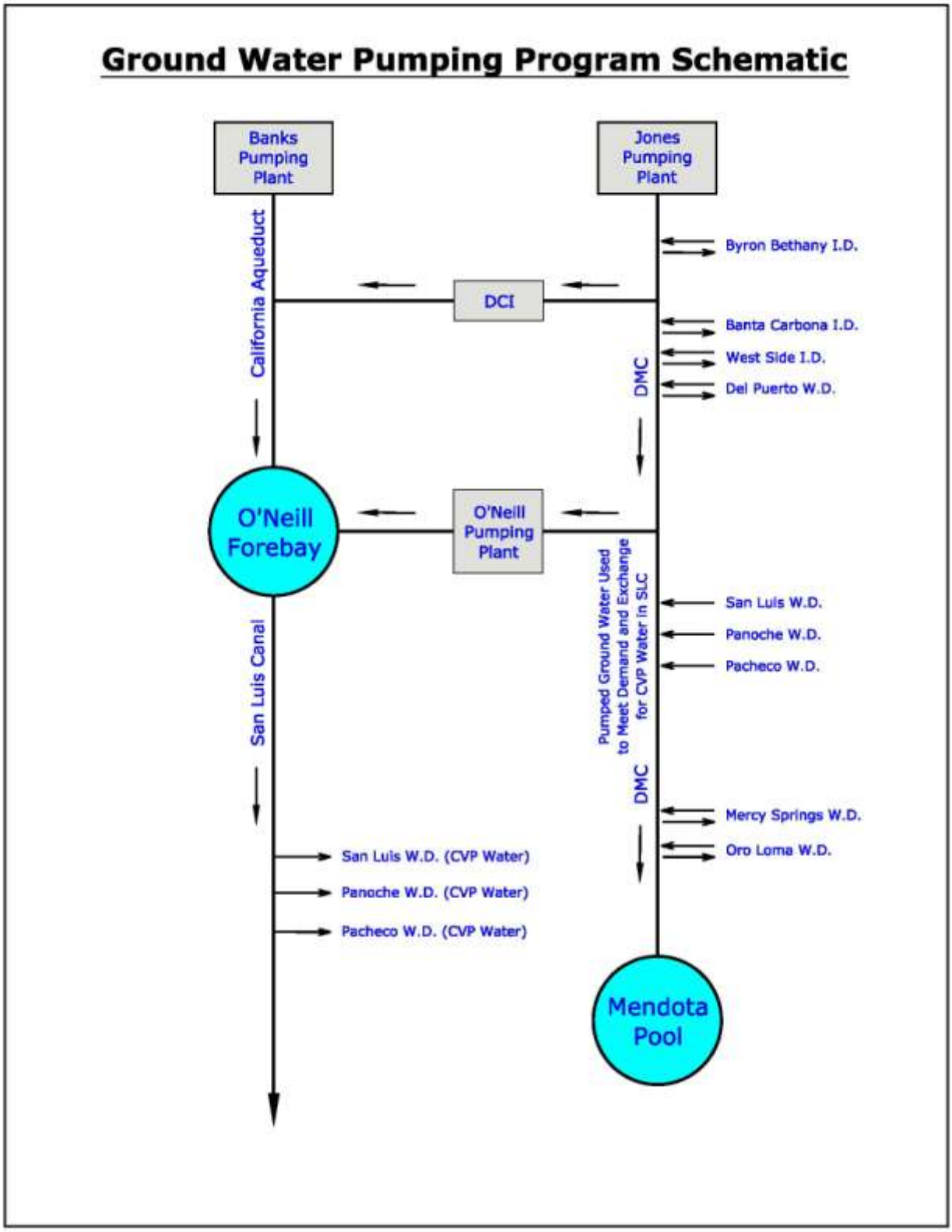

Figure 2-1 Groundwater Pumping Flow Schematic

2.2.2 Environmental Commitments

The SLDMWA participating member agencies shall implement the following environmental commitments to reduce environmental consequences associated with the Proposed Action (Table 2-1). These commitments are in addition to any commitments listed in Appendix A 2012 Delta-Mendota Canal Pump-in Program Water Quality Monitoring Plan including the San Joaquin River Exchange Contractors Water Authority February 3, 2012 Letter. Environmental consequences for resource areas assume the commitments specified would be fully implemented. Copies of all reports shall be submitted to Reclamation.

Table 2-1 Environmental Commitments

Resource	Protection Measure
Water Resources (Groundwater/Aquifer)	Each district would be required to confirm that the proposed pumping of groundwater would be compatible with local ordinances (Table 3-3 Groundwater Basins, Ordinances, and Districts). Each district would be limited to pumping a quantity below the "safe yield" as established in applicable ordinances or their groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts.
Water Resources (Groundwater/Aquifer)	No groundwater pumping would occur in Management Areas 2 and 3 since these areas are subject to inelastic subsidence.
Water Resources (Groundwater/Aquifer)	• All districts participating in the DMC Pump-in Program must provide annually 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 SLDMWA staff; • All compliance monitoring data collected by the SLDMWA 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 SLDMWA since May 1995. Annually, 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.
General	• The water shall be used for beneficial purposes and in accordance with Federal Reclamation law and guidelines, as applicable; • Use of the water shall comply with all federal, state, local, and tribal law, and requirements imposed for protection of the environment and Indian Trust Assets; • The water shall be used within the permitted place of use; • No land conversions may occur as a result of the Proposed Action; • No construction or other ground disturbing activity may occur as part of the Proposed Action.
General	There would be no new construction or excavation part of the Proposed Action.
Biological Resources (Potential Habitat)	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).

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Water Resources

3.1.1 Affected Environment

Water Districts

Banta-Carbona Irrigation District has a contract supply of 20,000 AF of CVP water. CVP water is used as a supplemental supply to the district's pre-1914 water rights on the San Joaquin River.

Byron Bethany Irrigation District has a contract supply of 20,600 AF of CVP water. BBID has up to 1,500 AF of pre-1914 water rights that is pumped by the California Department of Water Resources (DWR) via the Clifton Forebay and delivered to BBID. CVP water is used as a supplemental supply to the district's pre-1914 water supply.

Del Puerto Water District has a contract supply of 140,210 AF of CVP water. Currently, the only CVP supply used for Municipal and Industrial (M&I) purposes is the one or two acre-foot per month of landscape water for a small amount of acreage recently converted to commercial use. All remaining CVP supplies are used for agriculture.

Mercy Springs Water District has a CVP contract supply of 2,842 AF of CVP water.

Pacheco Water District has a contract supply of 10,080 AF of CVP water. 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.

Panoche Water District has a contract supply of 94,000 AF of CVP water. PWD delivers about 50 AF of water per year for M&I purposes.

West Stanislaus Irrigation District has a contract supply of 50,000 AF of CVP water.

San Luis Water District has a contract supply of 125,080 AF of CVP water. In 2011, SLWD delivered about 900 AF to Santa Nella County Water District for M&I use.

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. 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 Division via the DMC. 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, which is part of Reclamation's Delta Division facilities, provides for the transport of water through the central portion of California's Central Valley. The main features of the Delta Division are the Delta Cross Channel, Contra Costa Canal, Tracy Pumping Plant, and the DMC, all of which are constructed and operated by Reclamation. This system provides full and supplemental water, as well as temporary water service, for a total of about 380,000 acres of farmland. The San Luis Reservoir is part of Reclamation's San Luis Unit. The reservoir stores water from both the CVP and the State Water Project (SWP).

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 the Central California Irrigation District. Currently, the Mendota Pool is sustained by the inflow from the DMC, which typically conveys 2,500 to 3,000 cfs to the Mendota Pool during the irrigation season. The Mendota Poll also receives water from the San Joaquin River as part of the San Joaquin River Restoration Program and during San Joaquin River high flow periods. An additional source of water into Mendota Pool comes from adjacent land owners pumping groundwater into the Mendota Pool and take delivery of CVP water from the SLC via an exchange with Reclamation under the Mendota Pool Groundwater Pumping Program.

The 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. The 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. 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 (Totally Dissolved Solids [TDS] < 50 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).

Surface Water Resources

For the purpose of the effect analysis, baseline conditions are described as the existing environment, and the existing environment is defined as the average 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

agricultural purposes from 2008 to 2012. The five-year average is 43 percent of contract amounts for agriculture.

Table 3-1 Five Year CVP Allocation Percentages

Year	Allocation Percentage
2008	40
2009	10
2010	45
2011	80
2012	40
5-year Average	43

The maximum combined annual contract amounts for the districts is 462,812 AF, thus the baseline supply is 199,008 AF (Table 3-2).

Table 3-2 Figure Baseline Supply

Water District	Maximum Contract Amount	43 Percent of Contract Amount
Banta-Carbona Irrigation District	20,000	8,600
Byron Bethany Irrigation District	20,600	8,858
Del Puerto Water District	140,210	60,290
Mercy Springs Water District	2,842	1,222
West Stanislaus Irrigation District	50,000	21,500
Pacheco Water District	10,080	4,334
Panoche Water District	94,000	40,420
San Luis Water District	125,080	53,784
TOTAL	462,812	**199,008**

Groundwater Resources

Two primary hydrologic divisions of the San Joaquin Valley are agreed upon by DWR, the State Water Resources Control 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 mg/L (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. 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 surface water, cooperative banking concepts that rely on groundwater in dry years and surface water in wet years, and temporary storage of surface water 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 (GMP) in groundwater basins defined in DWR Bulletin 118. This act establishes a voluntary program whereby local water agencies may establish programs for managing their groundwater resources. The SLDMWA member agencies adopted the initial GMP for the Northern Agencies in the DMC Service Area and the GMP for the Southern Agencies in the DMC Service Area in 1996 (SLDMWA 1996).

The Northern area GMP was updated in 2011 and was adopted again by the Northern agencies in 2012. The Southern area GMP was revised in 2007 and is currently undergoing another update. The plan provides the SLDMWA the responsibility to monitor the regional groundwater conditions within the basin and in cooperation with the member agencies perform water level and water quality monitoring.

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, SLDMWA, CCID, WWD, Tulare Irrigation District, and James Irrigation District. In addition, several counties have adopted groundwater management plans and/or ordinances (see Table 3-3) [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 3-3 Groundwater Basins, Ordinances, and Districts

County	Subbasin Name	Ordinance	Districts overlying County & Subasin
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
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 groundwater pumping under the Groundwater Pump-in Program for the last 10 years (Table 3-4) shows that groundwater pumping has increased beginning with drought year 2008. It also correlates with the pumping curtailments in the Delta associated with environmental requirements.

Table 3-4 Past Groundwater Pumping Under the Groundwater Pump-in Program

CVP District	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
BCID	0	778	2756	1,273	0	0	0	0	0	0	0
BBID	0	0	1038	0	0	0	0	0	0	0	0
DPWD	584	1782	9099	2,029	0	0	0	100	0	0	123
MSWD	0	0	1712	0	0	0	0	0	0	0	0
PWD	0	0	0	0	0	0	0	0	0	0	0
Panoche	5449	7809	8510	7,184	744	0	0	0	0	0	0
SLWD	1173	2278	5975	2,909	999	0	0	660	765	2766	3048
WSID	0	0	0	0	0	0	0	0	0	0	0
TOTAL	7206	12647	29090	13,395	1743	0	0	760	765	2766	3171
10-YR Total	**71543**										
Data based on contract year (March through February) deliveries Non-CVP pumped quantities are in AF											

Sump Monitoring Reclamation operates six sumps located adjacent to the DMC between Russell Avenue at Milepost (MP) 97.68 and Washoe Avenue at MP 110.12. The sumps collect shallow groundwater from adjacent farmland and this water has been pumped into the canal since 1952. Though the volume is very low (less than 2 cubic feet per second [cfs]), the water in each sump contains toxic concentrations of selenium. Reclamation has been monitoring each sump since 1987 under a monitoring order (SJR027) issued by the Regional Water Quality Control Board. Selenium and salinity are measured weekly in all six sumps. In 2009, Reclamation committed $500,000 for the design and construction of a system to connect the sumps and discontinue the discharge into the canal. Reclamation is in negotiations with Panoche Drainage District to treat and dispose of the sump water. In 2013, the Regional Board is expected to revise the 1987 Order to cease discharge from the sumps in the DMC by December 2015.

Selenium Monitoring A selenium monitoring program was initiated in July 2002. Daily composite samples of water are measured for selenium and salts using auto samplers at three locations along the DMC and at the headworks 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 (MP 67). The samples are analyzed for many constituents including pesticides, trace metals, and bacteria.

3.1.2 Environmental Consequences

No Action

Reclamation would not issue two-Five Year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract years. The No Action Alternative consists of the continuation of deliveries of CVP

water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued 2-year contracts analyzed under 2-year EAs. Without the issuance of 2-year contracts, 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.

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 water to be delivered to Contractor's service areas to supplement CVP water supplies. No new facilities would be constructed as a result of the Proposed Action. There would be no construction or modification to the DMC and the capacity of the facility would remain the same. 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 under the Proposed Action. 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 would be pumped into the DMC under the Proposed Action would be limited to 50,000 AF/y, 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 groundwater management plan, in order to prevent groundwater overdraft and other 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. Though some of the water used for irrigation would be used up by evapotranspiration, 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 Monitoring Plan provides for routine testing of each well by Reclamation and SLDMWA to confirm that the groundwater continues to meet standards. Further, the Exchange Agreement and/or Warren Act Contract allow the Contracting Officer to stop the pumping of groundwater from wells 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 adverse cumulative impacts to existing facilities or other contractors. Because pumping would be restricted to below the safe yield, there would not be adverse cumulative impacts to groundwater. Because groundwater quality would be monitored throughout the year, there would be no adverse cumulative impacts to water quality involving water delivered through the DMC.

The Proposed Action would not result in the discharge of dredged or fill materials into waters of the United States that would require a Clean Water Act Section 404 permit or the discharge of pollutants into navigable waters that would require a Clean Water Act Section 401 Certification.

3.2 Land Use

3.2.1 Affected Environment

Banta-Carbona Irrigation District is an agricultural water district with a current size is 15,000 acres.

Byron Bethany Irrigation District is primarily an agricultural water district, however, since 1990, approximately 1,500 acres of land have been converted to M&I use.

Del Puerto Water District is primarily an agricultural district water district.

Mercy Springs Water District is entirely an agricultural district water district with a current size of 3,392 acres of which 3,336 acres are irrigable.

Pacheco Water District is an agricultural water district with a current size is approximately 4,979 acres in size, of that 4,242 acres are irrigated.

Panoche Water District is an agricultural water district with a current size of is approximately 38,038 acres in size, of which approximately 37,000 acres are irrigated.

San Luis Water District. The southern section of the district located in Fresno County is primarily agricultural. In recent years, some parcels in this area of the district have not been farmed because they are of marginal quality or have high water costs or drainage problems. The district's current size is approximately 56,663 acres.

West Stanislaus Irrigation District is an agricultural water district with a current size of approximately 20,155 acres. In addition, WSID, under a water rights agreement, delivers water to 2,207 acres of riparian land adjacent to the District located north of the unincorporated community of Grayson [Stanislaus 2009].

3.2.2 Environmental Consequences

No Action
Reclamation would not issue a Five Year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract

years. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued annual and 2-year contracts analyzed under annual and 2-year EAs. Without the issuance of 2-year contracts, 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.

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 PWD – 11,000 acres) of additional land could be fallowed.

Proposed Action

The Proposed Action would provide for supplemental Non-Project Water to be utilized by the Districts to help district keep agricultural lands in production and minimize the potential for fallowing agricultural lands. No new lands would be cultivated with this water. The Proposed Action would not increase or decrease water supplies that could affect development.

Cumulative Impacts

Because the Proposed Action would not involve construction or other land disturbance, and because the Proposed Action supports current land use, there would be no adverse cumulative impacts to land use. Because Byron Bethany Irrigation District's intention to transfer a portion of its CVP supply to the City of Tracy by 2025 is independent of the Proposed Action, the conveyance of the Non-Project Water through CVP facilities would not contribute to changes in land use.

3.3 Geology

3.3.1 Affected Environment

Land subsidence in the San Joaquin Valley has been studied extensively in the past by the U.S. Geological Survey (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.

This long-term inelastic subsidence was largely halted due to the State and Federal water projects alleviating the need for total reliance on groundwater for irrigation needs. However, in drought years, surface water decreases create demand for groundwater pumping that may lead to

subsidence. Thus, some areas of the San Joaquin Valley may still be susceptible to inelastic subsidence in these drought year conditions.

3.3.2 Environmental Consequences

No Action

The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued 2-year contracts analyzed under 2-year EAs.

Proposed Action

To assess the potential for incurring new subsidence as a result of the groundwater pumping of the Proposed Action, it is appropriate to review the available data on groundwater pumping and subsidence measurements. Correlations between historical pumping and subsidence can be compared to the proposed pumping to assess the likelihood that new subsidence would be incurred. The most recent and relevant subsidence data that is available is contained in a soon to be released report by the USGS (Sneed et al., in review). Groundwater pumping is not recorded in California and, thus, it is necessary to use estimates of actual pumping in a historical analysis. Such estimates are available in the soon to be released revision (Faunt et al., in review) of the USGS's Central Valley Hydrologic model (Faunt, 2009). Evaluation of the Proposed Action is based on the subsidence data in Sneed et al. (in review) as well as the groundwater pumping estimates in Faunt et al. (in review).

Continuous Global Positioning System, monitoring data of land subsidence are available from six stations along the DMC and the neighboring seven water districts participating in the Proposed Action. Appendix B Figures 1-2 through 1-7 display the data for these six stations from late 2005 through 2010 (Note that these figures give the recorded vertical displacements in millimeters. The blue lines are the raw data and the red lines are the 31-day averages). It can be seen that only one of these stations exhibits significant inelastic subsidence: station P303, which is located a few miles north of the southern end of the DMC. However, stations P259 and P301 also exhibit minor trend suggesting inelastic subsidence superimposed on the elastic subsidence.

The subsidence data presented in Appendix B Figures 1-2 through 1-7 suggest that the major area of concern with regard to subsidence potential is in the southern portion of the DMC, with possibly a minor area of concern in the more central portion of the DMC. The southern area of concern has possible implications for pumping from the Panoche, Pacheco, Mercy Springs, and San Luis Water Districts. The central area of concern has possible implications for pumping for the San Luis and Del Puerto Water Districts.

To attempt to correlate the observed subsidence measurements to district pumping, groundwater pumping estimates were extracted from the revised Central Valley Hydrological Model (CVHM) model (Faunt et al., in review). The new refinements of agricultural input data in this model allowed direct accounting for pumping from five of the Water Districts in the Proposed Action: Banta-Carbona, West Stanislaus, Del Puerto, San Luis, and Panoche. The CVHM model estimates agricultural groundwater pumping via a mass balance approach in which recorded surface water deliveries are subtracted from irrigation demands estimated based on land use data; the remainder is assumed to be satisfied by groundwater pumping. Urban pumping is also

incorporated via available records compiled by DWR. Appendix B Figures 1-8 through 1-12 display these groundwater pumping estimates. Also, the dashed red lines on these figures gives the historical pumping for the post 1980's period plus the proposed pumping. With the exception of Del Puerto, it can be seen that the proposed pumping is a small fraction (within one standard deviation) of the historical post-1980's pumping. This strongly suggests that the additional groundwater pumping in Banta-Carbona and West Stanislaus would not incur inelastic subsidence. It is also reasonable to expect that the proposed pumping in San Luis and Panoche would not result in inelastic subsidence due to the small fraction of overall pumping that it represents, as well as the fact that the P303 station is not immediately adjacent to these districts. Nonetheless, there is a possibility that this pumping in San Luis and Panoche Water Districts could bring the aquifer below the threshold for inelastic subsidence and lead to inelastic subsidence. Although there are not explicit groundwater pumping estimates for Mercy Springs and Panoche Water Districts, it is believed that they would fall into the same category of risk as San Luis and Panoche.

With regard to Del Puerto Water District, the substantial increase in groundwater pumping relative to post-1980's historical pumping estimates coupled with the subsidence observations at the north end of the district imply a significant risk of additional subsidence incurred by the proposed pumping. This risk is tempered, however, by the fact that the post-1980's pumping of Del Puerto are very small. Put another way, there is a large degree of uncertainty in interpreting the available data in the vicinity of Del Puerto. Nonetheless, the risk of some subsidence is considered significant.

To mitigate the potential risks of subsidence, a monitoring plan would be put in place as described below.

- All districts participating in the DMC Pump-in Program must provide annually 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 SLDMWA staff;
- All compliance monitoring data collected by the SLDMWA 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 SLDMWA since May 1995. Annually, 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 exceeds the maximum measured depth.

3.4 Biological Resources

3.4.1 Affected Environment

Many of the natural habitats in the Central Valley have been largely replaced by agricultural habitats. The habitats associated with the proposed action area are predominately agriculture and includes pasture, orchard, vineyard, and row crops. The intensive management of agricultural lands, including disking, grazing, crop rotation, and the use of chemicals, has extensively reduced the value of these habitats for wildlife.

A list of federal listed threatened and endangered species that occur within or near BBID, BCID, DPWD, MSWD, PWD, Panoche, SLWD, and WSID and/or may be affected as a result of the Proposed or Alternative Action was obtained on October 11, 2012, by accessing the U.S. Fish and Wildlife Service (USFWS) Database: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm (Document Number: 121011120107). The list is for the following USGS 7½ minute quadrangles (quads): which are overlapped the districts: Chounet Ranch, Oxalis, Dos Palos, Hammonds Ranch, Broadview Farms, Charleston School, Ortigalita Peak Nw, Laguna Seca Ranch, Volta, Los Banos, Howard Ranch, San Luis Dam, Crows Landing, Patterson, Orestimba Peak, Newman, Westley, Vernalis, Tracy, Solyo, Midway, Woodward Island, Brentwood, Byron Hot Springs, and Clifton Court Forebay. Reclamation also queried the California Natural Diversity Database (CNDDB), and combined the USFWS and CNDDB (2012) information with information in Reclamation's files to create the table 3-5.

Table 3-5 Threatened and Endangered Species List

Species	***Status[1]***	***Habitat***	***Effects[2]***	***Occurrence in the Study Area[3]***
AMPHIBIANS				
California red-legged frog (*Rana draytonii*)	E, X	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.	NE	**Present.** Documented as extant within western border of BBID and Critical Habitat on the Bethany Reservior State Rec. Area. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
California tiger salamander, central population (*Ambystoma californiense*)	T	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	NE	**Possible.** Suitable breeding habitats in the form of vernal pools and stockponds occur in the region. Rodent burrows can be common along the fringes of agricultural areas. No construction of new facilities in potential habitat and no conversion of lands from existing uses.

BIRDS				
Least Bell's vireo (*Vireo bellii pusillus*)	E	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	NE	**Unlikely.** Has been detected in recent years on the San Joaquin River National Wildlife Refuge west of Modesto.
FISH				
Central Valley steelhead (*Oncorhynchus mykiss*)	T	Anadromous species; spawns in cold waters.	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Chinook salmon - Central Valley spring-run (*Oncorhynchus tshawytscha*)	T	Anadromous species; spawns in cold waters.	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Chinook salmon - Sacramento River winter-run (*Oncorhynchus tshawytscha*)	E	Anadromous species; spawns in cold waters.	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Delta smelt (*Hypomesus transpacificus*)	T	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.	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Southern Distinct Population of North American green sturgeon (*Acipenser medirostris*)	T	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.	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
INVERTEBRATES				
Conservancy fairy shrimp (*Branchinecta conservatio*)	E	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.	NE	**Possible**. Vernal pool habitats within the study area may support populations of this species. CNDDB records indicate that this species is presumed extant. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Longhorn fairy shrimp (*Branchinecta longiantenna*)	E, X	Endemic to the eastern margin of the central coast mountains in vernal pools.	NE	**Possible**. Vernal pool habitats within the study area may support populations of this species. CNDDB records indicate that this species is presumed extant. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T	Lives in elderberry shrubs of California's Central Valley and Sierra Foothills with stems one inch or greater in diameter at ground level.	NE	**Present**. The host plant for this species is common throughout the region. CNDDB records indicate that this species is presumed extant. No construction of new facilities in potential habitat and no conversion of lands from existing uses.

Vernal pool fairy shrimp (*Branchinecta lynchi*)	T, X	Primarily found in vernal pools, may use other seasonal wetlands.	NE	**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. CNDDB records indicate that this species is presumed extant in Stanislaus, Contra Costa, and San Joaquin Counties. A small section of critical habitat occurs in BBID near the Byron Airport. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	E	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.	NE	**Possible**. Vernal pool habitats within the study area may support populations of this species. CNDDB records indicate that this species is presumed extant. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
MAMMALS				
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	E	Prefers arid, alkaline plains with sparse vegetation. There are no known populations within the circumscribed historical geographic range in Merced, Madera, and Fresno Counties.	NE	**Absent.** No individuals or habitat in area of impact.
Giant kangaroo rat (*Dipodomys ingens*)	E	San Joaquin River Annual grassland on gentle slopes of generally less than 10°, 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°.	NE	**Unlikely.** Some suitable habitats may be present in the southern portion of the study area.
Riparian brush rabbit (*Sylvilagus bachmani riparius*)	E	Habitat for the riparian brush rabbit consists of riparian communities dominated by willow thickets (*Salix* spp.), California wild rose (*Rosa californica*), Pacific blackberry (*Rubus vitifolius*), wild grape (Vitis californica), Douglas' coyote bush (*Baccharis douglasii*) and various grasses. A captive breeding program is in place in certain locations along the San Joaquin River.	NE	**Absent.** Only occurs in Stanislaus and San Joaquin Counties along the Stanislaus and San Joaquin Rivers.
Riparian woodrat (*Neotoma fuscipes riparia*)	E	Well-developed riparian habitats along the San Joaquin and Stanislaus Rivers.	NE	**Absent.** Only occurs in Stanislaus and San Joaquin Counties along the Stanislaus and San Joaquin Rivers.
San Joaquin kit fox (*Vulpes macrotis mutica*)	E	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	NE	**Present.** CNDDB records indicate that this species is presumed extant in Fresno, Merced, Stanislaus and San Joaquin Counties. No construction of new facilities in potential habitat and no conversion of lands from existing uses.

PLANTS				
Contra Costa goldfields (*Lasthenia conjugens*)	E, X	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range	NE	**Possible.** Extirpated from area but designated critical habitat located in the northeastern Livermore Valley, and in the vicinity of the Byron airport. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Large-flowered fiddleneck (*Amsinckia grandiflora*)	E	Cismontane woodland, valley and foothill grassland in various soils.	NE	**Possible**. In undisturbed areas of San Joaquin County. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
San Joaquin woolly-threads (*Monolopia congdonii*)	E	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.	NE	**Possible**. CNDDB records indicate extant populations occur within western foothills of Fresno County. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
REPTILES				
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	T	Typically found in chaparral and scrub habitats interspersed with other native vegetation types and rock lands. This species is mostly found on south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows.	NE	**Possible.** In undisturbed areas of Alameda, Contra Costa, and San Joaquin Counties. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Blunt-nosed leopard lizard (*Gambelia sila*)	E	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.	NE	**Present.** Documented as extant within Fresno and Merced County. No construction of new facilities in potential habitat and no conversion of lands from existing uses.
Giant garter snake (*Thamnophis gigas*)	T	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	NE	**Possible.** Documented as extant within Fresno, Merced and San Joaquin Counties. No construction of new facilities in potential habitat and no conversion of lands from existing uses. All pumped water would comply with water quality requirements, preventing potential impacts to this species.

1 Status= Listing of Federally special status species, unless otherwise indicated.
E: Listed as Endangered.
T: Listed as Threatened.
2 Effects =
NE = No Effect determination.
3 Definition Of Occurrence Indicators in Proposed Action Area.
Present: Species observed and suitable habitat present.
Possible: Species reported in area but suitable habitat suboptimal or entirely lacking.
Unlikely: Species recorded in vicinity over 10-years ago but habitat suboptimal or entirely lacking.
Absent: No species records and habitat requirements not met.
4 CNDDB = California Natural Diversity Database 2012.

3.4.2 Environmental Consequences

No Action

The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued 2-year contracts analyzed under 2-year EAs.

Proposed Action

There would be no impacts to biological resources as a result of the proposed project. Most of the habitat types required by species protected by the Endangered Species Act (ESA) do not occur in the project area. The proposed project would not involve the conversion of any land fallowed and untilled for three or more years. There would be no change in land use patterns of 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 Agreement and/or Warren Act contract related water would not reach streams containing listed fish species, there would be no effects to these species. No critical habitat would be affected by the proposed project.

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., Regional Board 1998, USFWS 2008). As presented in Section 3.1 Water Resources daily water quality monitoring would be conducted. The requirement that pumping cease if water quality objectives are exceeded would avoid adverse effects to 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 measurable effect because of the extremely short duration before the water quality standards are returned to background levels.

Because of the restrictions on groundwater pumping for each district there would be no adverse effects to the giant garter snake due to groundwater overdraft. In conclusion, the short duration of the water availability, 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 Socioeconomic Resources

3.5.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the San Joaquin Valley. The CVP allocations each year 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.

3.5.2 Environmental Consequences

No Action

Reclamation would not issue two- Five-Year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract years. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued annual and 2-year contracts analyzed under annual and 2-year EAs. Without the issuance of 2-year contracts, 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.

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 and/or Warren Act contracts would allow the Non-Project Water to be distributed to sustain permanent crops. This could help maintain the agricultural economy and the regional economy in general.

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 beneficial effects to the economy during the program timeframe.

3.6 Air Quality

Section 176 (C) of the Clean Air Act [CAA] (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal CAA (42 U.S.C. 7401 [a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the EPA promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.6.1 Affected Environment

The Proposed Action area lies within the San Joaquin Valley Air Basin (SJVAB) under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The pollutants of greatest concern in the San Joaquin Valley are carbon monoxide (CO), ozone (O_3), O_3

precursors such as volatile organic compounds (VOC), inhalable particulate matter between 2.5 and 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The SJVAB has reached Federal and State attainment status for CO, nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Although Federal attainment status has been reached for PM_{10} the State attainment status has not and both the State and Federal status are in non-attainment for O_3 and $PM_{2.5}$ (Table 3-6). There are no established standards for nitrogen oxides (NO_x); however, NO_x does contribute to NO_2 standards (SJVAPCD 2011).

Table 3-6 San Joaquin Valley Attainment Status

Pollutant	California Attainment Status	National Attainment Status
O_3	**Nonattainment**	**Nonattainment**
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	**Nonattainment**	Attainment
$PM_{2.5}$	**Nonattainment**	**Nonattainment**
Source: CARB 2012; SJVAPCD 2012a; 40 CFR 93.153		

Table 3-7 lists the kinds of pumps that could be used under the Pump-in Program for the participating districts.

Table 3-7 District Pumps

Water District	Pump Type	Horsepower
Banta-Carbona Irrigation District	New diesel & Natural gas engine with gear head	300
Byron Bethany Irrigation District	Two electric pumps and one diesel engine that meets the EPA Tier 3 requirement.	200
Del Puerto Water District	Electric pumps	N/A
San Luis Water District	Electric Pumps	N/A
Panoche Water District	Electric Pumps	N/A
Pacheco Water District	Electric Pumps	N/A
Mercy Springs Water District	Electric Pumps	N/A
West Stanislaus Irrigation District	Three Diesel Pumps that meet the EPA Tier 3 requirement.	390 Each

Table 3-8 lists the de minimis thresholds for the San Joaquin Valley Air Basin.

Table 3-8 San Joaquin Valley General Conformity de minimis Thresholds

San Joaquin Valley Air Basin			
Pollutant	**Federal Status**	**de minimis (Tons/year)**	**de minimis (Pounds/day)**
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	274
NO_x (as an ozone precursor)	Nonattainment serious 8-hour standard	50	274
PM_{10}	Attainment	100	548
CO	Attainment	100	548
Sources: SJVAPCD 2012a; 40 CFR 93.153			

3.6.2 Environmental Consequences

No Action

Reclamation would not issue two five-year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract years. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued annual and 2-year contracts analyzed under annual and 2-year EAs. Without the issuance of 2-year contracts, 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.

Proposed Action

The Proposed Action would allow Non-Project Water to be conveyed and stored in CVP facilities. This would allow Non-Project Water to be delivered to areas in the districts to supplement diminished CVP water supplies in 2013-2023. 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. A majority of power is derived from fossil fuel combusted at power plants to generate electricity. CO_2 is the primary pollutant emitted as a result of the oxidation of the carbon in the fuel however NO_x and PM_{10} are also emitted.

Air quality emissions for the Proposed Action are well below the de minimus thresholds for the SJVAPCD (Table 3-9); therefore, there would be no air quality impacts associated with this Proposed Action.

Table 3-9 Proposed Action Calculated Emissions

Calculated Proposed Action Emissions			
Pollutant	**Federal Status**	**de minimis (Tons/year)**	**Project emissions (Tons/year)**
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	0.15
NO_x (as an ozone precursor)	Nonattainment serious 8-hour standard	50	0.96
CO	Attainment	100	.052
PM_{10}	Attainment	100	Not Calculated
Sources: SJVAPCD 2012b; 40 CFR 93.153			

Cumulative Impacts

All emissions result in a cumulative increase in pollutants within the air basin however emissions from the Proposed Action are well below the de minimis standards and therefore cannot be considered a significant cumulative impact.

3.7 Global Climate

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (EPA 2011a).

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (CO_2), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO_2, methane (CH_4), nitrous oxide, and fluorinated gasses (EPA 2011a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO_2 and CH_4, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2011b).

Climate change has only recently been widely recognized as an imminent threat to the global climate, economy, and population. As a result, the national, state, and local climate change regulatory setting is complex and evolving.

In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020.

In addition, the EPA has issued regulatory actions under the CAA as well as other statutory authorities to address climate change issues (EPA 2011c). In 2009, the EPA issued a rule (40 CFR Part 98) for mandatory reporting of GHG by large source emitters and suppliers that emit 25,000 metric tons or more of GHG [as CO_2 equivalents (CO_{2e}) per year] (EPA 2009). The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change and has undergone and is still undergoing revisions (EPA 2011c).

3.7.1 Affected Environment

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006 (Intergovernmental Panel on Climate Change 2007). Models indicate that average temperature changes are likely to be greater in the northern hemisphere. Northern latitudes (above 24°North) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone (Intergovernmental Panel on Climate Change 2007). Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHG are likely to accelerate the rate of climate change.

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.7.2 Environmental Consequences

No Action

Reclamation would not issue two five-year Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the next ten contract years. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. Reclamation has previously issued annual and 2-year contracts analyzed under annual and 2-year EAs. Without the issuance of 2-year contracts, 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.

Table 3-10 Operational Emissions

Equipment Type	CO_2, lb/hr	Methane (CH_4), lb/hr	Nitrous Oxide (N_2O), lb/hr
Total Diesel and Natural Gas Powered Pumps	49.60	0.008	0.55
CO_2 equivalence	1	21	310
Total CO_2e, lb/hr of operation	49.60	0.168	170.5
Total annual hours of operation	3500	3500	3500
Total CO_2e per year pounds (short tons)	173600 (86.8)	588 (0.294)	596750 (298.37)
De minimis threshold (short tons)	Total 27,558		

Proposed Action

The Proposed Action would include the use of electric, diesel and natural gas powered pumps. As described in Table 3-10, the total annual GHG emissions of 385.46 short tons falls below the de minimis threshold of 27,558 short tons.

Cumulative Impacts

CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

3.8 Resources Eliminated from Further Analysis

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

Wetlands/Waters of the United States

Executive Order 11990 requires Federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands.

Section 404 of the Clean Water Act (33 U.S.C. § 1311) authorizes the U.S. Army Corps of Engineers (Corps) to issue permits to regulate the discharge of "dredged or fill materials into waters of the United States" (33 U.S.C. § 1344).

Section 401 of the CWA prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the Clean Water Act (33 U.S.C. § 1342 and 1344). Section 401 requires any applicant for an individual Corps dredge and fill discharge permit (Section 404 permit) 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.

Reclamation has determined that neither the No Action Alternative nor the Proposed Action would involve land disturbance that could impact wetlands or Waters of the United States.

Floodplains

Executive Order 11988 requires that all Federal agencies take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Reclamation has determined that neither the No Action Alternative nor the Proposed Action would affect floodplains as there are none within the action area.

Cultural Resources

Cultural Resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

Reclamation determined on August 15, 2012 that the Proposed Action has no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1).

Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

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.

No impact to Indian sacred sites would occur under the No Action Alternative as conditions would remain the same as existing conditions. The Proposed Action would not limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites. There would be no impacts to Indian sacred sites as a result of the Proposed Action.

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.

No impact to ITA would occur under the No Action Alternative as conditions would remain the same as existing conditions. Reclamation determined on August 14, 2012 that the Proposed Action would not impact ITA as there are none in the Proposed Action area.

Environmental Justice

The February 11, 1994, Executive Order 12898 requiring Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations went into effect. The Proposed Action does not propose any features that would result in adverse human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the Proposed Action.

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation provided the public with an opportunity to comment on the Draft FONSI and Draft EA between November 13, 2012 and December 13, 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 the exchange of pumped groundwater for CVP water. In addition, no construction or modification of water conveyance facilities are required for movement of this water. Consequently, Reclamation has determined that 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.

4.4 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.

Because there are no ground disturbing activities that could impact habitat or impacts to water resources that could impact special status species, there would be no effect to biological resources under either the Endangered Species Act or the Migratory Bird Treaty Act.

4.5 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 Area of Potential Effect, conduct cultural resource inventories, determine if historic properties are present within the Area of Potential Effect, and assess effects on any identified historic properties.

On August 15th 2012, Reclamation's Cultural Resources Branch issued a statement that the proposed action has no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1).

4.6 Clean Air Act (42 U.S.C. § 7506 (C))

Section 176 (C) of the Clean Air Act (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

Air quality emissions for the Proposed Action are below the de minimus thresholds and therefore, there would be no air quality impacts associated with this Proposed Action.

Section 5 Preparers and Reviewers

Chuck Siek M.A., Supervisory Natural Resources Specialist, SCCAO
Jennifer Lewis PhD., Wildlife Biologist, SCCAO
William Soule M.A., Archaeologist or Architectural Historian, MP-153
Patricia Rivera, ITA, MP-400
M. Cathy James, Repayment Specialist TO-442

Section 6 Acronyms and Abbreviations

APE	Area of Potential Effect
CAA	Clean Air Act
CFR	Code of Federal Regulations
Corps	Army Corps of Engineers
CO_2	Carbon dioxide
CWA	Clean Water Act
EA	Environmental Assessment
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FWCA	Fish and Wildlife Coordination Act
ESA	Endangered Species Act
GHG	greenhouse gases
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
mg/m^3	Milligram per cubic meter
M&I	Municipal and Irrigation
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PM_{10}	Particulate matter between 2.5 and 10 microns in diameter
PPM	Parts per million
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
$\mu g/m^3$	Microgram per cubic meter

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Section 7 References

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