

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Tranquillity Irrigation District/San Luis Water District Groundwater Transfer/Exchange Program—2011 through 2013

EA-10-092



**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.

Please note: A vertical line in the right margin indicates a change has been made to the text since the Draft Environmental Assessment was circulated for review and comment.

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List of Acronyms, Abbreviations and Definition of Terms

| | |
|-------------------|--|
| af | acre-feet |
| af/y | acre-feet per year |
| APE | area of potential effect |
| CCID | Central California Irrigation District |
| CVP | Central Valley Project |
| CVPIA | Central Valley Improvement Act |
| Delta | Sacramento and San Joaquin River Delta |
| DMC | Delta-Mendota Canal |
| DWR | California Department of Water Resources |
| EA | environmental assessment |
| EC | electrical conductivity |
| EPA | Environmental Protection Agency |
| FCWD | Firebaugh Canal Water District |
| FONSI | Finding of No Significant Impact |
| FSWD | Fresno Slough Water District |
| FWCA | Fish & Wildlife Coordination Act |
| FWS | United States Fish and Wildlife Service |
| GHG | Greenhouse Gases |
| ITA | Indian Trust Assets |
| MBTA | Migratory Bird Treaty Act |
| M&I | municipal and industrial |
| msl | mean sea level |
| NAAQS | National Ambient Air Quality Standards |
| National Register | National Register of Historic Places |
| NHPA | National Historic Preservation Act |
| Reclamation | Bureau of Reclamation |
| SIP | State Implementation Plan |
| SJR | San Joaquin River |
| SJV | San Joaquin Valley |
| SLC | San Luis Canal |
| SLDMWA | San Luis and Delta-Mendota Water Authority |
| SLR | San Luis Reservoir |
| SLWD | San Luis Water District |
| SOD | south of the Delta |
| SWRCB | State Water Resources Control Board |
| TDS | total dissolved solids |
| TQID | Tranquillity Irrigation District |
| USGS | United States Geological Survey |

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Section 1 Purpose and Need for Action

1.1 Background

California has experienced drought conditions in recent years that has reduced water supplies to many Central Valley Project (CVP) contractors. South-of-Delta (SOD) CVP water service contractors experienced reduced water supply allocations in recent years due to hydrologic conditions and regulatory requirements (Table 3-1). The hydrologic conditions for 2011 are still evolving and although conditions improved in 2010, it is likely that SOD CVP contractors will still need to supplement supplies to meet demands because of past dry years and overall CVP operational constraints. SOD CVP contractors thus need to identify additional supplies to avoid shortages for their customers. One of these contractors, the San Luis Water District (SLWD) is pursuing water management options to help meet their water demands.

1.2 Purpose and Need

There is a need for SLWD to supplement their CVP allocation to ensure adequate water supply for over 24,000 acres of permanent crops within the district in the 2011 through 2013 water years. The purpose of the proposed transfer/exchange is to offset the effects of pumping restrictions and uncertain water supply conditions.

1.3 Scope

This Final Environmental Assessment (EA) has been prepared to examine the potential direct, indirect and cumulative impacts of the Proposed Action; specifically, those areas within the service area boundaries of the Tranquillity Irrigation District (TQID) and SLWD.

Approval of the proposed action would allow continuance of the 2009-2011 Tranquillity Irrigation District/San Luis Water District Groundwater Exchange Program analyzed in EA 09-99. The total proposed exchange in the 2009-2011 Program allowed up to 14,000 acre-feet (af) where as the 2011-2013 Program would allow up-to to 15,000 af but not to exceed 7,500 af in any water year. Actual transfers will be determined by water needs. Under the previous 2009-2011 Program a total of 8,420 af was transferred. The word “Transfer” has been added to the title since EA 09-99 to reflect the action between TQID and SLWD. The word “Exchange” reflects the action between TQID and the Bureau of Reclamation (Reclamation).

Reclamation provided the public with an opportunity to comment on the draft EA/FONSI from February 15, 2011 to March 1, 2011. No comments were received.

1.4 Potential Issues

Potentially affected resources in the Proposed Action vicinity include:

- Water Resources
- Geologic Resources

- Land Use
- Biological Resources
- Cultural Resources
- Indian Trust Assets
- Socioeconomic Resources
- Environmental Justice
- Air Quality
- Global Climate Change
- Cumulative Impacts

1.5 Authorities for the Proposed Action

The Proposed Action analyzed in this EA is subject to the following contracting authorities and guidelines as amended and updated and/or superseded:

- Title XXXIV Central Valley Project Improvement Act (CVPIA), October 30, 1992, Section 3405 (a)
- Reclamation Reform Act, October 12, 1982
- Section 14 of the Reclamation Act of 1939
- *Contracts for Additional Storage and Delivery of Water*—CVPIA of 1992, Title 34 (of Public Law 102-575), Section 3408, Additional Authorities (c) authorizes the Secretary of the Interior to enter into contracts pursuant to Reclamation law and this title with any Federal agency California water user or water agency, State agency, or private nonprofit organization for the proposed transfer/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). The CVPIA is incorporated by reference.
- 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 (FWS) 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 CVP Area Offices—Water Transfers", March 17, 2008

Section 2 Alternatives Including the Proposed Action

2.1 No Action

Under the No Action Alternative, Reclamation would not approve the proposed transfer of up to 15,000 af over a two year period of TQID pumped groundwater to SLWD. Reclamation would not approve the proposed exchange of water pumped by TQID to the Mendota Pool for CVP water that would otherwise be delivered to CVP Contractors.

2.2 Proposed Action

The Proposed Action would involve the transfer of up to 15,000 af of water from TQID to SLWD over two water years (2011 through 2013). Transfer in any single water year shall not exceed 7,500 af.

TQID would deliver groundwater from their well field to their distribution system connected either to the Fresno Slough Main Canal or to the Tranquillity Main Canal. The water would then enter the Fresno Slough which flows into the Mendota Pool. TQID routinely pumps water from the irrigation district-owned wells into their internal distribution system and then into the Mendota Pool as a temporary storage/equalization facility.

The TQID water delivered to the Mendota Pool would be exchanged with Reclamation for water that Reclamation would otherwise deliver to CVP contractors. There would be losses of 5 percent accounted for in Mendota Pool in exchanging this water; otherwise, the proposed exchange would be “bucket-for-bucket” (Figure 2-1).

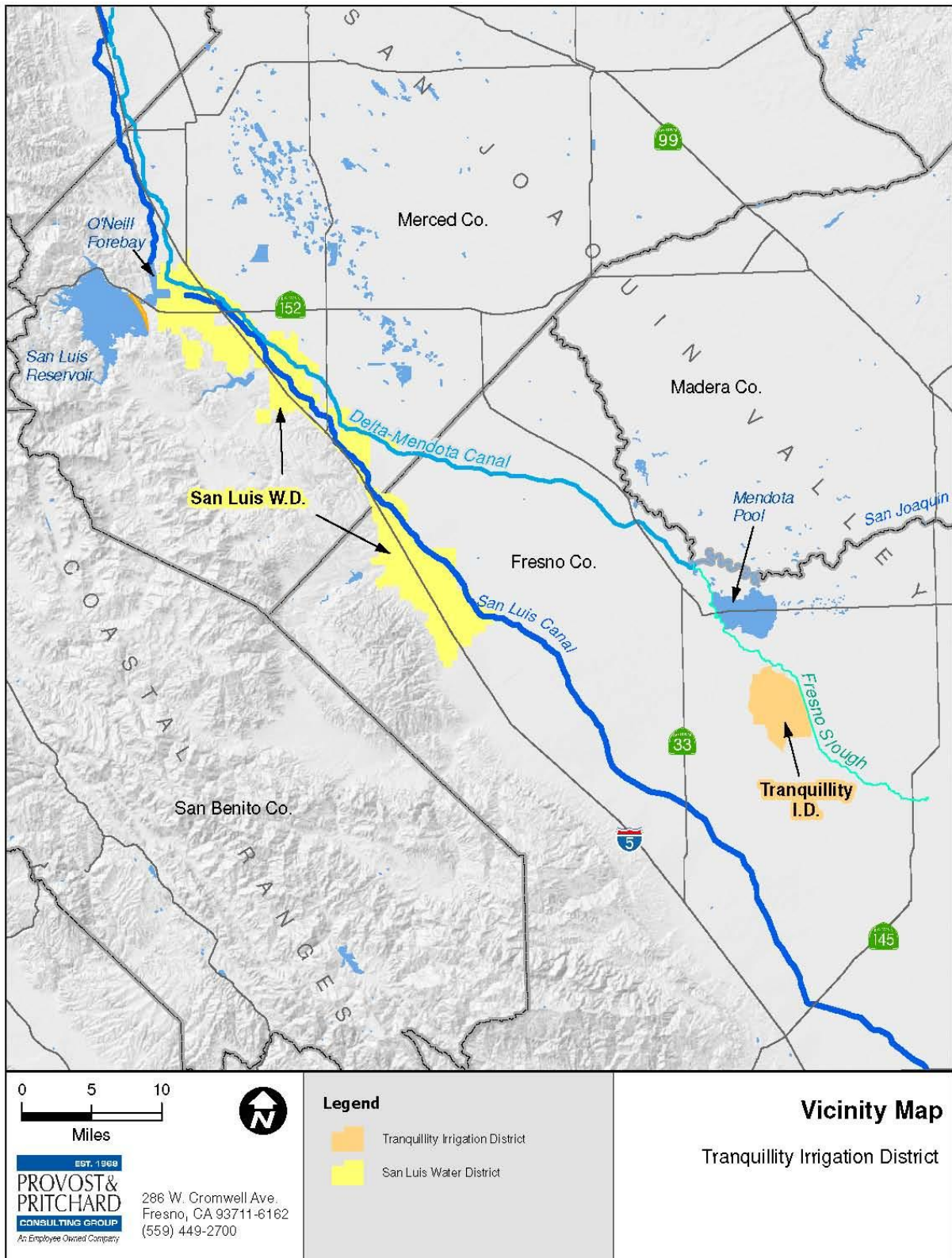
Reclamation would facilitate the proposed exchange of TQID groundwater for CVP supplies either by:

- CVP water delivery to SLWD via the San Luis Canal (SLC) at existing points of diversion within thirty days of the TQID groundwater delivery to the Mendota Pool;
- Delivery of CVP water to SLWD via the SLC at existing points of diversion at a later date.

All deliveries to, or storage of, proposed transfer/exchange water to SLWD would occur on a schedule approved by Reclamation. The San Luis Delta-Mendota Water Authority (SLDMWA) would account for the pumped-in water, water delivered and any water stored.

Every year SLWD purchases water from numerous sources to protect permanent crops. TQID sells water that is temporarily surplus to their needs. The proceeds for the sale would offset TQID’s capital and operational costs.

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Figure 2-1. Location Map - TQID, SLWD, Mendota Pool, SLR and SLC

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Section 3 Affected Environment and Environmental Consequences

3.1 Water Resources

3.1.1 Affected Environment

SLWD and 2011 Contract Allocations

SLWD is located on the western side of the San Joaquin Valley (SJV) near the town of Los Banos and within both Merced and Fresno Counties. SLWD was formed in 1951 and is comprised of 66,218 acres, of which approximately 56,500 are irrigable. In recent years irrigated acreage has averaged around 34,000 acres due to declining water supply reliability.

SLWD's current distribution system includes 52 miles of pipelines, 10 miles of lined canals, and 7.5 miles of unlined canals. About 20,000 acres within SLWD, referred to as the Direct Service Area, receive water from 39 turnouts on the Delta-Mendota Canal (DMC) and 23 turnouts on the SLC. In addition to the Direct Service Area, three improvement districts are also served through distribution systems branching off the SLC. Improvement District 1 is located primarily within Fresno County; Improvement District 2 is located entirely within Fresno County; Improvement District 3 is located entirely within Merced County.

Individual landowners within SLWD get the water they need by performing water transactions. To supplement CVP water, landowners in SLWD often participate in water transfer arrangements. Even in a year of 100 percent CVP allocation, many landowners would not have the amount of water that they need. SLWD implements the "free market" approach to water transfers and allows individual water users to maximize the efficient use of their supplies by transferring water both within and outside SLWD boundaries. Very few restrictions are placed on such transfers. Water transfers are for a single year only and must be renewed annually; water transfers cannot be relied upon as a long-term supply.

SLWD entered into a long-term contract with Reclamation in 1959 for 93,300 af per year (af/y) of CVP water. This contract was superseded with a contract executed in 1974, for a maximum of 125,080 af/y of CVP water. In December 2008, Reclamation and SLWD executed an Interim Renewal Contract for the same 125,080 af/y. Although water deliveries by SLWD historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to municipal and industrial (M&I) use.

The 10-year average allocation of CVP water supplies delivered to the SOD agricultural water contractors is described in Table 3-1. It lists maximum deliveries of CVP water on a contract basis from 2001 to 2010. The 10-year average is 59.4 percent of contract

maximum amounts. With an annual contract maximum for SLWD of 125,080 af, the average CVP supply to SLWD has been 74,298 af. With a 2010-11 allocation of 45 percent (56,286 af) SLWD is 18,012 af below the typical supply levels. Thus, SLWD needs additional water resources to meet their minimum in-district demands.

Table 3-1. Historic SLWD CVP Allocations (as Percentage Amount of Contract)

| Contract Year | Allocation (percent) |
|----------------------|-----------------------------|
| 2001-2002 | 49 |
| 2002-2003 | 70 |
| 2003-2004 | 75 |
| 2004-2005 | 70 |
| 2005-2006 | 85 |
| 2006-2007 | 100 |
| 2007-2008 | 50 |
| 2008-2009 | 40 |
| 2009-2010 | 10 |
| 2010-2011 | 45 |
| Average | 59.4 |

Tranquillity Irrigation District and 2011 Contract Allocations

TQID was formed on January 22, 1918, as a public agency designed to serve the local community with water. The District is responsible for acquisition and delivery of surface water and groundwater for irrigation purposes. Additionally, the District, when formed, established the Community of Tranquillity, an unincorporated community which is wholly within the District boundary. TQID encompasses approximately 10,750 acres in the west central portion of Fresno County in California's Central SJV.

Also as a SOD CVP agricultural water contractor, TQID has experienced similar reductions as SLWD to their CVP contract supply. Fortunately, TQID also has access to CVP water supplies based upon historic water rights that were affected by the construction of Friant Dam on the San Joaquin River (SJR). This water rights settlement water has priority delivery status and as such is a firmer source of supply only suffering from limited reductions in drought years.

The 10-year average allocation of CVP water supplies delivered to TQID is described in Table 3-2. It lists maximum deliveries of CVP water on a yearly basis from 2001 to 2010. The 10-year average is 59.4 percent for TQID's SOD agricultural water supply contract maximum entitlement and 100 percent of its settlement contract entitlement. The annual contract entitlement for TQID is 13,800 af SOD agriculture and 20,200 af of settlement entitlement, thus the 10-year average supply is 8,197 af of SOD agriculture and 20,200 af of settlement supplies (total equals 28,397 af). TQID's 2010 CVP water supply was 6,210 af of SOD agriculture and 20,200 af of settlement supplies for a total of 26,210 af. TQID also has access to groundwater (TQID Well Field) and maintains high flow water rights to the Kings River.

Table 3-2. Historic TQID CVP Allocations (as Percentage Amount of Contract)

| Contract Year | Allocation (%) | |
|----------------------|-----------------------|-------------------|
| | SOD Ag | Settlement |
| 2001-2002 | 49 | 100 |
| 2002-2003 | 70 | 100 |
| 2003-2004 | 75 | 100 |
| 2004-2005 | 70 | 100 |
| 2005-2006 | 85 | 100 |
| 2006-2007 | 100 | 100 |
| 2007-2008 | 50 | 100 |
| 2008-2009 | 40 | 100 |
| 2009-2010 | 10 | 100 |
| 2010-2011 | 45 | 100 |
| Average | 59.4 | 100 |

TQID has determined it has enough water to weather the shortfalls in CVP allocations for 2011. It is anticipating pumping its Well Field some 9,200 af in 2011 to assist in meeting in-district needs in addition to the 7,500 af it is willing to pump to benefit SLWD consistent with this transfer/proposed transfer/exchange . It anticipates pumping volumes to be similar in 2012 unless water allocations in the CVP markedly improved over 2011.

Regional Groundwater Resources and Conditions

According to the California Department of Water Resources (DWR) Bulletin 118 (DWR 2003), groundwater provides approximately 30 percent of the total water supply for the SJR Hydrologic Region. However, the amount of groundwater use within the region varies widely, both between different areas and from one year to the next.

Two primary hydrologic divisions of the SJV are agreed upon by DWR, the State Water Resources Control Board (SWRCB), and the United States Geological Survey (USGS). The San Joaquin Hydrologic Study Area comprises the northern one-third of the SJV, encompasses 3,800 square miles, and includes San Joaquin, Stanislaus, Merced, and Madera counties. The Tulare Lake Hydrologic Study Area comprises the southern two-thirds of the SJV and encompasses 7,900 square miles. The Tulare Lake Hydrologic Study Area includes Fresno, Kings, Tulare, and Kern counties (DWR, 2003). SLWD sits within the San Joaquin Hydrologic Study Area, but TQID sits on the far western edge of the boundary between these two Hydrologic Study Areas. Technically TQID is part of the San Joaquin Hydrologic Study Area, but groundwater resources in the area are shared (flow back and forth) between the San Joaquin Hydrologic Study Area and the Tulare Lake Hydrologic Study Area.

Much of the SJV aquifer system is in overdraft conditions, although the extent of overdraft varies widely from area to area. In the San Joaquin Hydrologic Study Area, overdraft conditions were estimated at approximately 209,000 af/y in 1990 (DWR 2003).

In 1990, approximately 19 percent (1,307,000 af/y) of the region's water needs were met by groundwater pumping (DWR 2003). The Tulare Hydrologic Study Area has experienced a greater degree of overdraft, estimated at 630,000 af, with groundwater pumping estimated at 5,190,000 af for 1990 conditions. Groundwater pumping in the SJV varies seasonally. Most groundwater is withdrawn during the spring-summer growing season, although pumping in some areas may occur throughout the entire year.

In the western SJV, 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.

Groundwater conditions of the San Luis Unit of the CVP are typified by those of the Westside Sub-basin. This sub-basin consists mainly of lands in Westlands Water District and is located between the Coast Range foothills on the west and the SJR drainage and Fresno Slough on the east. TQID sits immediately adjacent to eastern edge of this subbasin. Primary recharge to the aquifer system is from seepage of Coast Range streams along the west side of the sub-basin and deep percolation of imported surface irrigation. Flood basin deposits along the eastern sub-basin have caused near surface soils to drain poorly, thus restricting the downward movement of percolating water. This restricts drainage of irrigation water and results in the development of drainage problem areas.

Groundwater levels in the Westside Sub-basin were generally at their lowest levels in the late 1960s, prior to importation of surface water. After the CVP began delivery to the San Luis Unit in 1967-68, water levels gradually increased to a maximum in about 1987-88, falling briefly during the 1976-77 drought. Water levels began dropping again during the 1987-92 drought. Through a series of wet years after the drought, 1998 water levels recovered nearly to 1987-88 levels. The fluctuations in water levels illustrate both the importance of CVP deliveries in sustaining groundwater levels and the continuing influence of local and CVP-wide hydrologic conditions on surface water availability and, hence, on groundwater conditions in those areas where groundwater is pumped.

Tranquillity Irrigation District Well Field Groundwater Hydrology

The following discussion of the groundwater conditions in TQID and areas potentially affected by pumping of the TQID's Well Field are largely taken from the recently completed Groundwater Management Plan for TQID and the Fresno Slough Water District (FSWD) (Provost & Pritchard Consulting Group, May 2009).

Regional Hydrogeologic Setting

TQID is located in the Delta-Mendota sub-basin of the SJV Hydrologic Study Area and is the southernmost extension of the Delta-Mendota sub-basin south of the City of Mendota. TQID appears to be located in this groundwater sub-basin primarily due to the areas connection to the Fresno Slough which flows towards the Mendota Pool. However, groundwater aquifer characteristics and availability for TQID are very similar to the western edge of the Kings sub-basin and the eastern edge of the Westside sub-basin.

According to DWR Bulletin 118 (2003), the SJV region is heavily reliant on groundwater with up to 30 percent of agricultural and urban supplies coming from the underground aquifers. Bulletin 118 also identifies 11 basins as being in critical conditions of overdraft. The SJV Hydrologic Study Area and the Delta-Mendota sub-basin are not included on the list of basins/sub-basins identified as being in a state of critical overdraft.

In 2001 TQID acquired lands, some of the associated water rights from those lands, and assumed water delivery responsibilities within FSWD. Since then, a series of five groundwater wells that pump from below the Corcoran clay have been developed in this area due to its proximity to the Fresno Slough. These wells, developed between 2003 - 2008, are part of a network of groundwater wells regularly used for “Transfer Pumping” through the Mendota Pool so that TQID can “stockpile” pumped groundwater through temporary storage in the Mendota Pool. The TQID Well Field pumps groundwater (maximum 6,000 af between August and November each year) into distribution systems connected to the Fresno Slough Main Canal and the Tranquillity Main Canal that would be diverted to spill into the Fresno Slough that flows into the backwaters of the Mendota Pool.

TQID developed joint groundwater management plans with FSWD. As a policy, TQID does not allow private agricultural wells within TQID; rather TQID wells deliver groundwater to both the community of Tranquillity and the growers within TQID’s service area.

In the development of their recent Groundwater Management Plan, TQID calls for future groundwater level monitoring as being important so these long-term trends can also be established in and near the pumping centers.

As part of this proposed program of groundwater pumping and proposed transfer/exchange, TQID would monitor groundwater levels in the TQID Well Field and several nearby monitor wells (Figure 3-1). Current static water levels are approximately 25 feet above mean sea level (msl). Available records indicate that the historic low static water level in the confined aquifer in this area is approximately 30 feet below msl.

To avoid the potential of inelastic subsidence (Section 3.2), the proposed program would be suspended if average measured groundwater levels decline to 30 feet below msl. The pumping and transfer/proposed transfer/exchange program would not be recommenced until measured groundwater levels recovered to at least 20 feet below msl. In previous years, TQID has observed that the once pumping has ceased, water levels in their Well Field continue to recover over a one week period, rising as much as 30 feet before reaching a static state.

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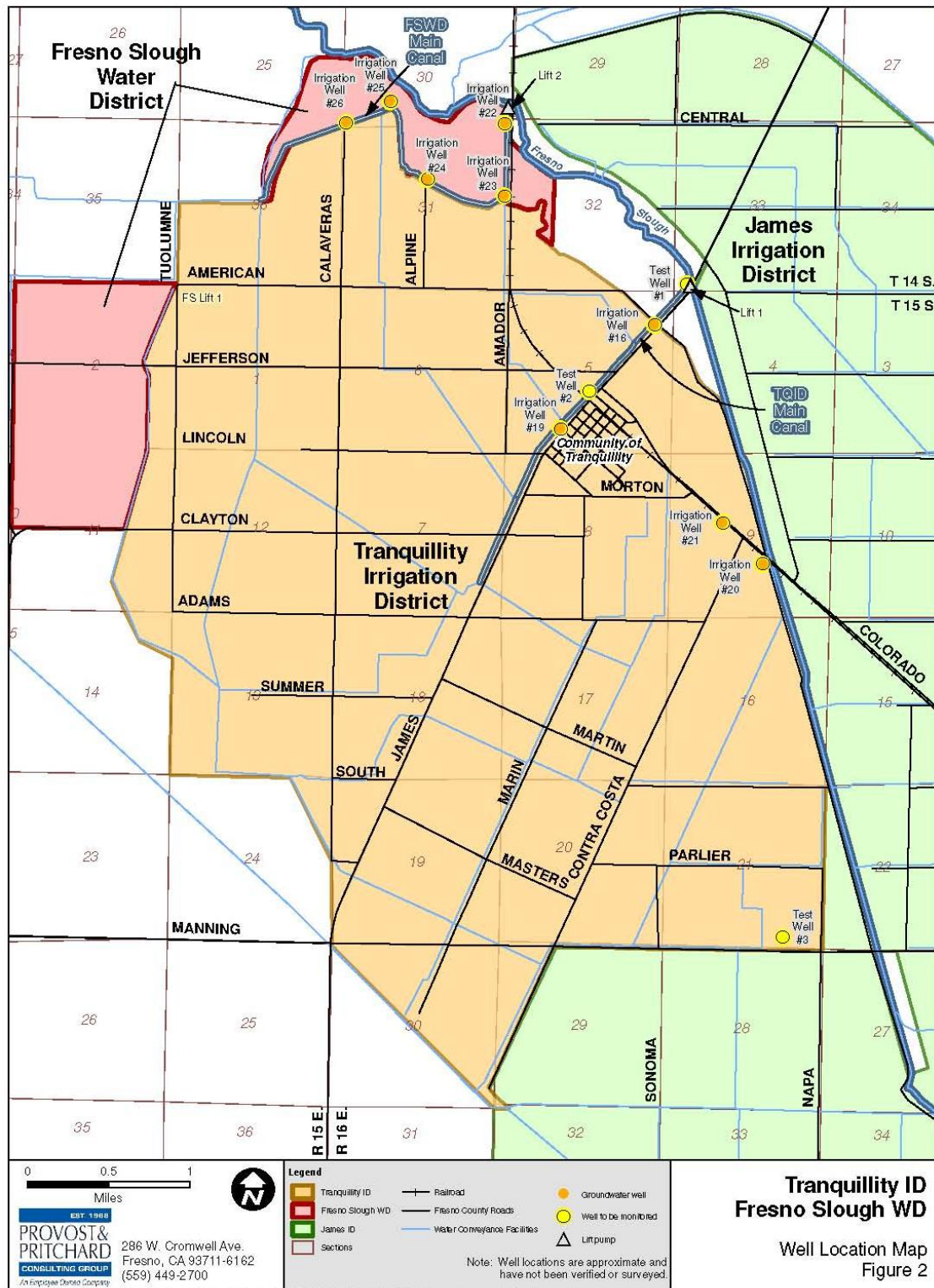


Figure 3-1 TQID Well Field, Lifts and Monitoring Wells

Water Quality

Water in each well currently meets water quality standards for the existing Transfer Pumping program (agreement between TQID and the SLDMWA) to the Mendota Pool that TQID participates in, and the monitoring of groundwater quality monitored by SLDMWA would continue throughout the period of the proposed transfer/exchange.

3.1.2 Environmental Consequences

No Action

The No Action Alternative consists of not approving the delivery of TQID groundwater through the Fresno Slough to the Mendota Pool in the proposed transfer/exchange. TQID would likely pump less groundwater this year than what is being proposed, but additional groundwater pumping of poor quality would occur in the SLWD service area.

Proposed Action

Under the Proposed Action, Reclamation would approve a transfer/exchange of groundwater pumped from the TQID Well Field of up to 15,000 af for 2011-2012 through 2012-2013.

This proposed transfer/exchange involving CVP water would not alter the flow regime of natural waterways or natural watercourses such as the Delta, rivers, streams, creeks, ponds, pools, wetlands, etc., so as to avoid detrimental effects on fish or wildlife or their habitats. No native or untilled land (fallow for 3 years or more) will be cultivated with CVP water involved in these actions. No new construction or modification of existing facilities is to occur in order to complete the proposed transfer/exchange.

This proposed transfer/exchange involving CVP water would comply with all applicable federal, state and local laws, regulations, permits, guidelines and policies. Appendix A addresses Environmental Mitigation and Monitoring Commitments.

3.2 Geological Resources

3.2.1 Affected Environment

Regional Subsidence

Land subsidence in the SJV has been studied extensively in the past by the USGS and DWR. A State-Federal committee on subsidence was formed in the early 1950's and performed research and measured subsidence until 1970. By 1970, 5,200 square miles in the SJV 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 SJV 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

SJV experienced inelastic, non-recoverable subsidence. However, recent studies indicate that current subsidence west of the Proposed Action area is primarily elastic in nature, and would likely not be inelastic until water levels fall below historic low levels.

The most recent reports on land subsidence in the SJV were completed by R.L. Ireland of the USGS in 1986 and Arvey A. Swanson of DWR in 1995. Ireland (1986) states that *“Land subsidence to groundwater withdrawal in the SJV that began in the mid-1920’s and reached a maximum of 29.7 feet in 1981 has been halted by the importation of surface water through major canals and the California Aqueduct in the 1950’s through 1970’s.”* This was evident because large scale regional subsidence had halted, but smaller-scale local subsidence continued in many areas. Poland and others (1975) estimated that cumulative non-recoverable land subsidence from 1926 to 1972 in the vicinity of Tranquillity was on the order of 8 feet.

Data from six extensometers located west of the Proposed Action area indicates that subsidence there has been elastic since about 1977, which probably indicates that subsidence in the plan area since about 1977 has been elastic in nature, and will not be permanent subsidence until water levels fall below historic low levels.

3.2.2 Environmental Consequences

No Action

TQID would likely pump less groundwater this year than what is being proposed, but additional groundwater pumping would occur in the SLWD service area.

Proposed Action

Elastic and recoverable subsidence occurs as long as water levels remain above historic lows. A review of water levels in the area of TQID for the 1963-1967 low was compared with water levels for April 2009. It was found that water levels for the most recently available data are 70 to 100 feet above historic lows. In this region during the 1976-1977 and 1987-1992 droughts, water levels fell about 80 feet per year.

The use of an average of measured groundwater levels is only valid if all of the wells monitored are perforated solely in the lower, confined aquifer. If groundwater data from a shallow well is used, the average would be mistaken as being higher, and pumping may continue under conditions in which it would otherwise be suspended.

Pumping for the current year would cause a water level fall which would be above the historic low in the vicinity of the wells involved in the proposed transfer/exchange . Subsidence that occurs from pumping these wells this season would therefore be elastic and recoverable upon the return of water levels.

3.3 Land Use

3.3.1 Affected Environment

San Luis Water District

The southern section of the district located in Fresno County is primarily agricultural. The land is planted with either row crops, including cotton and melons, or permanent crops, including primarily almonds. 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.

Construction of the DMC in the 1950's sparked major development of farmland in the SJV that led to the formation of SLWD in January 1951. SLWD's current size is approximately 66,218 acres. The current population within SLWD is approximately 700, with most individuals residing in the community of Santa Nella, located in the extreme northern portion of the district.

CVP water is the SLWD's only long-term water supply. SLWD does not own any groundwater wells and has no other long-term contracts for surface or groundwater supplies. All of the groundwater wells in the area are privately owned and operated. About 20 private agricultural wells provide water to 6,000 acres in the Direct Service Area. The vast majority of SLWD's water users do not have meaningful access to groundwater that can be used for irrigation, and therefore, supplementation of the CVP supply is nominal.

Although water deliveries by the SLWD historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The SLWD currently supplies approximately 1,200 af/y to approximately 1,300 homes and businesses. M&I demands within SLWD are expected to increase.

M&I use primarily occurs in the northern section of SLWD, which is located in Merced County. It is anticipated that the conversion from agricultural use to M&I use will occur mostly in this section of SLWD. Approximately 10,000 acres identified as potential development locations are currently in the planning stages within Merced County and the SLWD. Much of the land targeted for M&I development is currently unused for irrigated agriculture.

Tranquillity Irrigation District and Fresno Slough Water District

TQID encompasses approximately 10,750 acres in the west central portion of Fresno County in California's Central SJV. The principal community is the unincorporated community of Tranquillity, which is within the District boundary. FSWD is located on the north and northwestern edge of TQID. The District includes 1,459 acres and has approximately 1,030 acres of cropped land consisting primarily of field crops. The vast majority of farmland in both service areas is classified as Irrigated Farmland by the California Department of Conservation.

The Fresno County General Plan designates most areas within the TQID and FSWD's service areas as "intensive agriculture." Supplemental irrigation is required for these activities as the area receives an average of only 7.4 inches of rainfall per year. Other agricultural uses, while not directly dependent on irrigation for production, are also consistent with the intensive agriculture designation. Permitted uses include, but are not limited to, irrigated cropland, orchards, vineyards, horse ranches, beekeeping, ranch and farm facilities, and related uses.

3.3.2 Environmental Consequences

No Action

TQID would likely pump less groundwater this year than what is being proposed, but additional groundwater pumping would occur in the SLWD service area and/or additional permanent crops would be at risk. Under this alternative, SLWD would not have an additional water supply or increased delivery flexibility. Under the No Action Alternative it is believed that additional land could be taken out of production. SLWD could attempt to purchase other sources of water including through-Delta deliveries.

Proposed Action

The proposed transfer/exchange would provide additional surface water to allow SLWD agricultural lands to remain in production, and to transfer groundwater for future delivery to support existing farmlands, minimize the potential for fallowing agricultural land and avoid additional demand on Delta supplies. No new agricultural development is expected under the proposed transfer/exchange. The conveyance of the groundwater through CVP facilities would not contribute to changes in land use. The proposed transfer/exchange would generate no new housing and would result in no new permanent population growth that would exceed official regional or local population projections in the TQID or SLWD service areas. The approval to be covered under this EA would be for 2011-2013 and would be limited to use of this groundwater with no resulting land use changes.

3.4 Biological Resources

3.4.1 Affected Environment

The project area is dominated by agricultural habitat that includes field crops, orchards, and pasture. The vegetation is primarily crops and frequently includes weedy non-native annual and biennial plants.

Table 3-3 was obtained on September 24, 2010 (Document # 100924114817), by accessing the FWS Database: http://www.fws.gov/sacramento/es/spp_list.htm. The list is for the following USGS 7.5 minute quadrangles, which overlapped the districts in the TQID and SLWD: Jamesan, San Joaquin, Tranquillity, Cantua Creek, Chounet Ranch, Dos Palos, Hammonds Ranch, Charleston School, Ortigalita Peak NW, Laguna Seca Ranch, Los Banos Valley, Volta, Los Banos and San Luis Dam.

Table 3-3. Federal Species List

| Special status species that could potentially occur within in affected area. | | | |
|---|----------------------------------|-----------------------------------|---|
| <u>Species</u> | <u>Status¹</u> | <u>Effects²</u> | <u>Occurrence in the Study Area³</u> |
| Amphibians | | | |
| California red-legged frog (<i>Rana aurora draytonii</i>) | FT, X | NE | Possible. CNDDDB records for individuals approximately 2 miles west of SLWD. No individuals or habitat in area of effect. No construction of new facilities; no conversion of lands from existing uses. |
| California tiger salamander (<i>Ambystoma californiense</i>) | FT, X | NE | Absent. No individuals or habitat in area of effect. |
| Birds | | | |
| California condor (<i>Gymnogyps californianus</i>) | | NE | Possible. Will forage up to 100 miles from roost/nest. There are records for this species approximately 70 miles southeast of TQID. No construction of new facilities; no conversion of lands from existing uses. |
| Swainson's hawk (<i>Buteo swainsoni</i>) | ST | NE | Present. CNDDDB records indicate this species occurs in the project area. No construction of new facilities; no conversion of lands from existing uses. |
| Fish | | | |
| Central Valley steelhead (<i>Oncorhynchus mykiss</i>) | FT | NE | Absent. No natural waterways within the species' range will be affected by the proposed action. |
| delta smelt (<i>Hypomesus transpacificus</i>) | FT | NE | Absent. No natural waterways within the species' range will be affected by the proposed action. |
| Invertebrates | | | |
| longhorn fairy shrimp (<i>Branchinecta longiantenna</i>) | FE | NE | Absent. No individuals or habitat in area of effect. |
| valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>) | FT | NE | Absent. Closest record is approximately 3 miles from area from 1987. No individuals documented in this area. |
| vernal pool fairy shrimp (<i>Branchinecta lynchi</i>) | FT | NE | Absent. No individuals or habitat in area of effect. |
| vernal pool tadpole shrimp (<i>Lepidurus packardii</i>) | FE | NE | Absent. No individuals or habitat in area of effect. |
| Mammals | | | |
| Fresno kangaroo rat (<i>Dipodomys nitratoideus exilis</i>) | FE, X, SE | NE | Absent. Believed extirpated from area. No individuals or habitat in area of effect. No construction of new facilities; no conversion of lands from existing uses. |
| giant kangaroo rat (<i>Dipodomys ingens</i>) | FE, SE | NE | Absent. No individuals or habitat in area of effect. |
| San Joaquin kit fox (<i>Vulpes macrotis mutica</i>) | FE, ST | NE | Present. CNDDDB records indicate this species occurs in the project area. No construction of new facilities; no conversion of lands from existing uses. |
| Plants | | | |
| palmate-bracted bird's-beak (<i>Cordylanthus palmatus</i>) | FE, SE | NE | Absent. No individuals or habitat in area of effect. |
| San Joaquin woollythreads (<i>Monolopia congdonii</i>) | FE | NE | Absent. No individuals or habitat in area of effect. |
| Reptiles | | | |
| blunt-nosed leopard lizard (<i>Gambelia sila</i>) | FE, SE | NE | Present. Documented as extant along western border of SLWD. No construction of new facilities; no conversion of lands from existing uses. |
| giant garter snake (<i>Thamnophis gigas</i>) | FT, ST | NE | Present. Presumed extant from area. Latest records from 1976. No construction of new facilities; no conversion of lands from existing uses. Water quality will be continuously monitored and will comply with established water quality standards (see Proposed Action section above.) |

¹Listed as Federally (F) or State (S) Endangered (E), Threatened (T), or Critical Habitat (X).

²No Effect determination.

³Occurrence indicators: Present: species observed in area, Possible: species not observed in last 10 years, Absent: species not observed in area and habitat requirements not met.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to biological resources since conditions would remain the same as existing conditions.

Proposed Action

Effects are similar to the No Action Alternative. Although the Proposed Action would transfer/exchange water through the Mendota Pool, water levels and flow of the Mendota Pool would not change and would therefore, not have an impact on the existing biological habitats. The proposed transfer/exchange would not involve the conversion of any land and would therefore not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA). Since no natural stream course alteration would occur, there would be no effects on listed fish species.

3.5 Cultural Resources

3.5.1 Affected Environment

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The SJV is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the SJV. The SJV supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the SJV have been limited. The conversion of land and intensive farming practices over the last century has probably destroyed many Native American cultural sites.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there are no impacts to cultural resources since there would be no ground disturbance. Conditions related to cultural resources would remain the same as exiting conditions.

Proposed Action

Exchanging water as described in the proposed transfer/exchange would not result in impacts to archeological or cultural resources as no land disturbance will occur (Appendix B). These lands are agricultural lands that have undergone cultivation and land disturbance for more than 20 years.

3.6 Indian Trust Assets

3.6.1 Affected Environment

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 individual Indians. 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. ITAs cannot be sold, leased or otherwise alienated without United States’ approval. ITAs 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, ITAs may be located off trust land.

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

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative there would be no impacts to ITA, since conditions would remain the same as existing conditions.

Proposed Action

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

There are no ITAs, Indian Reservations, or public domain allotments found within the water districts involved (Appendix C). Therefore, the Proposed Action would not affect ITAs.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the SJV. The CVP allocations each year allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. Depending upon the variable hydrological and economic conditions, water transfers and exchanges could be prompted. The economic variances may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel and power costs.

3.7.2 Environmental Consequences

No Action

Under the No Action Alternative economic conditions in the vicinity of SLWD would continue to worsen. SLWD has limited groundwater and without this proposed transfer/exchange agricultural land would be taken out of production. As agricultural land is taken out of production there will be a decreasing need for farm labor, and farm equipment and supplies.

Proposed Action

The proposed transfer/exchange would not interfere with CVP priorities or operations and would result in temporarily increased water supply reliability for SLWD. The proposed transfer/exchange would have a positive socioeconomic impact to the SLWD area in that agricultural land would be maintained in production and the associated farm service industries would also be supported. The proposed transfer/exchange would allow for some additional portion of continued water deliveries to SLWD and would help to maintain the stability of the agricultural market and economic vitality for this part of the San Joaquin Valley.

3.8 Environmental Justice

3.8.1 Affected Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations.

The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America.

3.8.2 Environmental Consequences

No Action

The No Action Alternative would continue to allow the poor economic conditions in the area to worsen. As farm workers are almost entirely made up of individuals from disadvantaged communities and poor economic conditions in the farm economy have disproportionate impacts on those that work on the farm, the conditions of harm to minority or disadvantaged populations in this region would persist.

Proposed Action

Without the proposed transfer/exchange water, some field crops may not be planted or may become stressed. The proposed transfer/exchange would positively affect low income and minority populations because these populations include farm workers. Therefore the proposed transfer/exchange would not disproportionately impact minority and disadvantaged populations.

3.9 Air Quality

3.9.1 Affected Environment

Despite years of improvements, the SJV air basin does not meet state and federal health-based air-quality standards. To protect health, the SJV Air District is required by federal law to adopt stringent control measures to reduce emissions.

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 provided 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 a 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 will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (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. The following de minimis amounts for the region covering Project area are presented in Table 3-4.

Table 3-4. Conformity de minimis Levels

| Pollutant | Federal Status | De minimis (Tons Per Year) |
|---|---------------------------------------|-------------------------------|
| VOC (as an ozone precursor) | Nonattainment serious 8-hour ozone | 50 |
| NO _x (as an ozone precursor) | Nonattainment serious 8-hour standard | 50 |
| PM 10 | Attainment | 100 |
| CO | Attainment | 100 |
| Sources SJVAPCD 2009; 40 CFR 93.153 | | |

3.9.2 Environmental Consequences

No Action

TQID would likely pump less groundwater this year than what is being proposed, but additional groundwater pumping would occur in the SLWD service area. Therefore, conditions would remain the same as existing conditions.

Proposed Action

Effects are similar to the No Action Alternative. Of the nine wells that would likely participate in the Proposed Action, none are powered with internal combustion engines.

3.10 Global Climate

3.10.1 Affected Environment

Climate change refers to significant change in measures of climate that last for decades or longer. Burning of fossil fuels is considered a major contributor to perceived global climate change. Carbon dioxide, which is produced when fossil fuels are burned, is a greenhouse gas (GHG) that effectively traps heat in the lower atmosphere. Some carbon dioxide is liberated naturally, but this may be augmented greatly through human activities.

Human activity has substantially added to the amount of carbon dioxide in the atmosphere, primarily through burning of fossil fuels. This action enhances the natural greenhouse effect, and is likely contributing to an increase in global average temperature and related climate changes. The magnitude and significance of anthropogenic effects is being examined and debated and there is uncertainty associated with the science of climate change (EPA 2009).

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).

California Assembly Bill 32, the Global Warming Solutions Act of 2006, mandates the reduction of GHG emissions in California to 1990 levels by the year 2020. Currently there are no established significance thresholds for GHG in the SJVAB or in California.

3.10.2 Environmental Consequences

No Action Alternative

Implementation of the No Action Alternative would involve no change on the composition of GHG in the atmosphere and therefore would not contribute to global climate change.

Proposed Action

Of the nine wells that would likely participate in the Proposed Action, none are powered with internal combustion engines. GHG generated by the proposed transfer/exchange is expected to be extremely small compared to sources contributing to potential climate

change since the exchange of water would be conveyed mostly via gravity and little, if any, additional pumping from electric motors would be required. While any increase in GHG emissions would add to the global inventory of gases that would contribute to global climate change, the Proposed Action would result in potentially minimal to no increases in GHG emissions and a net increase in GHG emissions among the pool of GHG would not be detectable.

3.1.1 Cumulative Impacts

In order to meet irrigation demands, SLWD is pursuing other potential water transfers including those listed below. Currently, the following potential transfers and exchanges are anticipated in 2011:

1. Transfer of up to 6,600 af from the SJR Exchange Contractor 5-year Transfer Program
2. Transfer and exchange of up to 8,000 af of groundwater delivered via the Delta Mendota Canal.
3. Up to 20,000 af delivered in 2011 pursuant to a 2010 exchange program with Metropolitan Water District of Southern California.

The proposed transfer/exchange, when added to other actions, would not contribute to significant increases or decreases in environmental conditions because the proposed transfer/exchange was found to have no adverse impact on biological resources, cultural resources, Indian Trust Assets, air quality and socioeconomics and no substantial adverse impact on water resources or geologic resources. Therefore there is no contribution to cumulative impacts to any these resource areas caused by the proposed exchange.

Section 4 Consultation and Coordination

Fish and Wildlife Coordination Act (16 USC § 651 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. Since there would be no ground disturbance and water would move in existing facilities the FWCA does not apply.

Endangered Species Act (16 USC §1521 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Since there would be no ground disturbance and water would move in existing facilities there would be no effect on endangered species.

National Historic Preservation Act (15 USC § 470 et seq.)

The NHPA of 1966, as amended (16 USC 470 et seq), is the primary legislation that outlines the Federal government's responsibility to cultural resources. Cultural resources include both archaeological and built environment resources. Section 106 of the NHPA requires that Federal agencies take into consideration the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed on or eligible for inclusion in the National Register of Historic Places (National Register). The CFR Part 800 regulations implement Section 106 of the NHPA and outline the procedures necessary for compliance with 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 (APE), conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties. The Federal agency consults with the State Historic Preservation Officer on agency determinations and findings and seeks their concurrence with the Federal agency findings.

The activities associated with implementing the proposed transfer/exchange described in the proposed transfer/exchange would include no new ground disturbance, no change in land use, and the use of existing conveyance features to move the proposed transfer/exchange water. Reclamation has determined that there would be no potential to affect historic properties by the proposed action pursuant to 36 CFR 800.3(a)(1).

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

The Migratory Bird Treaty Act (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 MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The proposed transfer/exchange would not affect birds protected under the MBTA.

Farmland Protection Policy Act (Subtitle I of Title XV, Section 1539-1549)

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible Federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland.

The FPPA does not authorize the Federal Government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

Any effect to prime farmland, unique farmland, and land of statewide or local importance would be beneficial and result in no permanent conversion of farmland. As such, consultation and/or coordination with the Natural Resource Conservation Service pursuant to the FPPA was not required.

Executive Order 11988 – Floodplain Management

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

The Proposed Action would not involve housing or other, major above-ground structures, within a flood hazard area that could impede floodwater flows and as such would not conflict with Executive Order 11988.

Executive Order 13007 – Indian Sacred Sites

Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites. At this time no Indian Sacred Sites have been identified. Should a sacred site be identified in the future, Reclamation would comply with Executive Order 13007.

Executive Order 12898 – Environmental Justice

To the greatest extent practicable and permitted by law, and consistent with the principles set forth In the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marian islands.

Under the Proposed Action only beneficial effects are anticipated to minority and/or low-income populations and therefore consultation and/or coordination with representatives of these groups was not required.

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Section 5 List of Preparers and Reviewers

Reclamation preparers/reviewers include:

- Erma Clowers, Repayment Specialist
- Shauna Mc Donald, Wildlife Biologist
- Adam Nickles, Cultural Resources
- Patricia Rivera, Indian Trust Assets
- Chuck Siek, Supervisory Natural Resource Specialist

Provost and Prichard Consulting Group preparers include:

- Rick Besecker
- Dennis R. Mills, P.E.
- Richard M. Moss, P.E.

TQID reviewers include:

- Danny Wade, General Manager

SLWD reviewers include:

- Martin McIntyre, General Manager

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Section 6 References

- Anderson, J, F. Chung, M. Anderson, L. Brekke, D. Easton, M. Ejatal, R. Peterson, and R. Snyder. 2008. Progress on Incorporating Climate Change into Management of California's Water Resources. Climate Change (2008) 87 (Suppl 1): S91-S108 DOI 10.1007/s 10584-007-9353-1
- Borchers, J.W., 1998, editor, Land Subsidence, Case Studies and Current Research, Proceedings of the Dr. Joseph F. Poland Symposium on Land Subsidence, AEG Spec. Publication No. 8.
- Bull, W.B. and Miller, R.E., 1975, Land Subsidence Due to Groundwater Withdrawal in the Los Banos – Kettleman City Area, California, USGS Prof. Paper 437-E. DWR 2006.
http://www.water.ca.gov/groundwater/data_and_monitoring/south_central_region/GroundwaterLevel/basin_contour.cfm?map=delt_e06.gif
- Galloway, D., Jones, R., and Ingebritsen, S.E., 1999, Land Subsidence in the United States, USGS Circular 1182.
- Ireland, R.L., 1986, Land Subsidence in the San Joaquin Valley, California, as of 1983, USGS Water-Resources investigations Report 85-4196.
- Provost & Pritchard Consulting Group, Groundwater Management Plan – Tranquillity Irrigation District and Fresno Slough Water District, June 2009.
- Sokol, Dan, United States Bureau of Reclamation, Tranquillity Irrigation District, Geology, Chapter III, February 1955.
- Swanson, A.A., 1995, Land Subsidence in the San Joaquin Valley, Updated to 1995, in: J. W. Borchers, ed: Land Subsidence Case Studies and Current Research: Proceedings of the Dr. Joseph F. Poland Symposium on Land Subsidence, Assoc. of Engineering Geologists, Sp. Pub. 8.
- Vega, G.F., Yamamoto, S., and Working Group by Helm, D.C., 1984, Techniques for Prediction of Subsidence, in: J. F. Poland Chairman and Editor, Guidebook to Studies of Land Subsidence due to Ground-Water Withdrawal, Prepared for the International Hydrological Programme, Working Group, Unesco.

Appendix A: Environmental Mitigation and Monitoring Commitments

Please Note: Compliance with these measures is required to maintain approval for the Federal Action.

| Resource | Discussion | Mitigation/Monitoring Measures | Reporting/ Notification Requirement | Compliance Schedule | Responsible Agency and contact information |
|--------------------------------|--|---|--|--|--|
| Groundwater (Water Quality) | The ground water pumped for the proposed Transfer/Exchange shall not degrade the quality of water in the Fresno Slough or TQID system. | <p>The District will provide a monthly summary of measurements of water quality in the active wells, TQID system, and Fresno Slough. The quality of water in the Fresno Slough, measured at the TQID headworks, must not exceed:</p> <p>TDS – 1,200 ppm pH – between 6.0 and 9.0 Selenium – 2.0 µg/L</p> <p>If an exceedance occurs, Reclamation will advise TQID to stop pumping until the concentration in the Fresno Slough has diminished below the target levels</p> | Monthly reports of water quality to SLDMWA and Reclamation. | Monthly during the proposed Transfer/Exchange program. | TQID |
| Groundwater (Levels) | The groundwater pumped for the proposed Transfer/Exchange shall not cause an irreparable drop in groundwater elevation. | In accordance with the July 2009 Groundwater Management Plan, TQID will monitor the depth to groundwater in the active wells associated with this Transfer/Exchange. Reclamation and TQID, in cooperation with the SLDMWA, will determine a threshold maximum depth to groundwater in the active wells. | Monthly reports of depth to groundwater to SLDMWA and Reclamation. | Monthly during the proposed transfer/Exchange program | TQID |

Revised: 07 March 2011 SCC-107

Appendix B Cultural Resource Determination

Siek, Charles R

From: Barnes, Amy J
Sent: Wednesday, December 22, 2010 1:51 PM
To: Siek, Charles R
Cc: Clowers, Erma O; Hyatt, David E; Perry, Laureen (Laurie) M; Nickels, Adam M; Overly, Stephen A; Bruce, Brandee E; Goodsell, Joanne E; Fogerty, John A; Dunay, Amy L
Subject: RE: Tranquillity ID to San Luis WD Groundwater Exchange

Tracking #11-SCAO-052

Project: EA-10-092 TQID to SLWD Groundwater Exchange for 2011-2013

The proposed activities associated with Reclamation approving an exchange of TQID groundwater for Central Valley Project (CVP) water will have no potential to affect historic properties. The proposed water exchange will utilize existing Reclamation facilities, including Mendota Pool, San Luis Canal, and San Luis Reservoir and their existing points of diversion. This project will not require new construction or modification to these facilities.

As the proposed action has no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1), no additional consideration under Section 106 of the National Historic Preservation Act is required.

Thank you for the opportunity to review the proposed action. Please place a copy of this concurrence with the EA administrative record. Please also incorporate the following edits to the EA.

3.6 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.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties. Reclamation uses the Section 106 process to identify and consider impacts to cultural resources that may be affected by actions outlined in this EA.

3.6.1 Affected Environment

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The SJV is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the SJV. The SJV supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the SJV have been limited. The conversion of land and intensive farming practices over the last century has probably destroyed many Native American cultural sites. (please include bibliographic reference from which this summary is drawn).

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative, the water exchange would not occur and no potential impacts to cultural resources would occur. All operations would remain the same, resulting in no impacts to cultural resources.

Proposed Action

The Proposed Action involves the transfer and/or exchange of water through existing facilities, which would not result in modifications, new construction, or changes in land use. Because the Proposed Action would result in no physical alterations of existing facilities and no ground disturbance, Reclamation concludes that the Proposed Action has no potential to cause effect to historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1), and would result in no impacts to cultural resources.

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

The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which 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 listed on cultural resources on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion on the National Register are referred to as historic properties.

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Appendix C Indian Trust Asset Determination

From: Rivera, Patricia L
Sent: Friday, January 14, 2011 9:39 AM
To: Siek, Charles R
Cc: Williams, Mary D (Diane); Robbins, Eleanor J (Ellie)
Subject: RE: Tranquillity/SLWD ITA Request

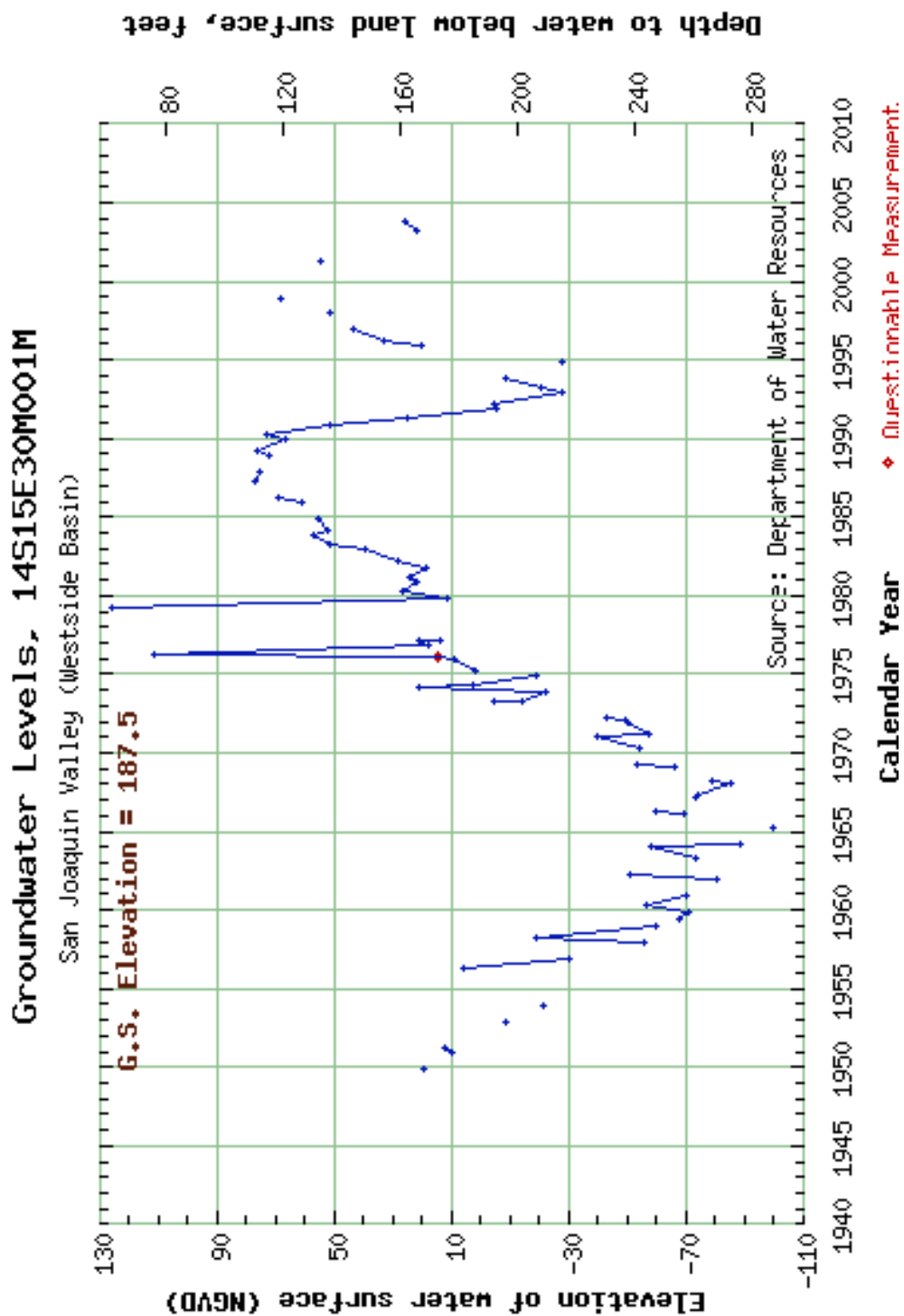
I reviewed the proposed action to exchange of groundwater pumped from the TQID Well Field of up to a total of 15,000 af for water years 2011/12 through 2012/13. This groundwater would be pumped into the TQID distribution systems connected to either the Fresno Slough Main Canal or the Tranquillity Main Canal and then diverted to spill into the neighboring Fresno Slough which flows into the backwaters of the Mendota Pool. There the water would be exchanged with Reclamation for water that would otherwise be delivered to CVP contractors (Exchange Contractors and/or other CVP contractors).

The proposed action does not have a potential to affect Indian Trust Assets.

Patricia

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Appendix D Groundwater Levels Westside Basin



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Appendix E Groundwater Levels Delta-Mendota Basin

