

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Four Year Transfer and Warren Act Contracts for up to 13,350 acre-feet of Patterson Irrigation District's Available Surface Water Supply to Santa Clara Valley Water District

EA-09-172



**U.S. Department of the Interior
Bureau of Reclamation
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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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List of Acronyms and Abbreviations

AF	acre-foot
AFY	acre-foot per year
APE	Area of Potential Effect
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CCID	Central California Irrigation District
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CH ₃	methane
CO	Carbon monoxide
CO ₂	Carbon dioxide
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
Delta	San Joaquin-Sacramento River Delta
DMC	Delta-Mendota Canal
DWR	California Department of Water Resources
EA	Environmental Assessment
EC	Electrical Conductivity
ESA	Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
M&I	Municipal and Industrial
mg/L	Milligram per liter
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NO _x	Nitrous oxide
PID	Patterson Irrigation District
PM ₁₀	Inhalable particulate matter

Reclamation	Bureau of Reclamation
ROG	Reactive organic gases
ROW	Rights-of-way
SCVWD	Santa Clara Valley Water District
SFBAAB	San Francisco Bay Area Air Basin
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SOD	South-of-Delta
State	State of California
SWP	State Water Project
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Loads
Transfer Water	PID's Replacement Water, CVP Water, and pre-1914 San Joaquin River Water
µg/L	Microgram per liter
µS/cm	MicroSiemens per centimeter
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile organic compounds

Section 1 Purpose and Need for Action

1.1 Background

The State of California (State) has historically experienced periods of drought and flooding. Water agencies strive to prepare for varying water supply conditions to the extent possible so that agricultural or urban water supply needs can be met regardless of the water year type. This is done by having a variety of water supply options that can be implemented as needed. Having the ability to move water supplies from an area of greater supply to an area of lesser supply is one strategy that can be useful.

Currently, the State is experiencing unprecedented water management challenges during a third consecutive year of drought. Both the State and Federal water projects are forecasting very low storage conditions in all major reservoirs. Specifically for the Central Valley Project (CVP), additional factors have contributed to the reduction in total water supplies this year. These include: 1) low reservoir water supply conditions coming into 2009 from a dry 2007 and 2008, and 2) limits placed on pumping at the Jones Pumping Plant for purposes of meeting court-ordered delta smelt and salmon protections. Based on all these factors, the Bureau of Reclamation (Reclamation) declared a shortage in the amount of water available to South-of-Delta (SOD) contractors for the 2009 contract water year (March 1 through February 28, 2010). Due to these challenging times, Reclamation expects to continue to explore options within its authority in order to minimize impacts to those affected by this water shortage.

Patterson Irrigation District (PID) is located near the City of Patterson, in Stanislaus County, California along San Joaquin River, between the Merced and Tuolumne Rivers (Figure 1-1). PID provides water to about 770 customers on approximately 12,800 acres. PID's primary water supply is pre-1914 rights diverted from the San Joaquin River; however, PID also receives CVP and Replacement Water from Reclamation via the Delta-Mendota Canal (DMC) and pumps groundwater from seven existing wells. Replacement Water is in addition to PID's contracted CVP water acquired as a result of a settlement between PID and Reclamation for the construction of Friant Dam and the subsequent partial obstruction of the natural flow of the San Joaquin River.

PID desires to remain a predominantly agricultural district, and as result, has historically detached lands annexed to the City of Patterson due to urban development. As recently as July 2007, PID detached 692 acres concurrently with the annexation of the same lands to the City of Patterson for urban development. PID has also experienced losses of irrigable agricultural acreage due to rural development such as the building of new homes, the installation of yards and the construction of driveways and outbuildings. These changes in land use is an example of the type of actions that have resulted in a reduction in PID's consumptive use, and subsequently created an excess water supply in past years which PID would sell via transfer for the financial benefit of the district and its water rate payers.

In 2009, PID approached Reclamation with a request to transfer up to 13,350 acre-feet (AF) of its Replacement Water, CVP water, and pre-1914 San Joaquin River water (henceforth known as Transfer Water) to Santa Clara Valley Water District (SCVWD) over a period of four years (March 1, 2010 through February 28, 2014).

1.2 Purpose and Need

PID's purpose is to help its drought-stricken neighbor by transferring water to SCVWD while still being able to adequately supply water to its own customers.

SCVWD is in need of additional water supplies in order to sustain agricultural crops due to reduced CVP and State Water Project (SWP) supplies and reliability caused by three consecutive years of drought. For 2009, SCVWD received 10 percent of its SOD CVP water allocation. In addition, regulatory constraints on pumping from the San Joaquin-Sacramento River Delta (Delta) have contributed to the water shortages for SOD CVP contractors and are likely to continue in the foreseeable future. Table 1-1 below shows the allocation percentages for SOD CVP contractors during the last five years, including the five-year average of 57 percent.

Table 1-1 SOD CVP Contractor 5-Year Allocation Percentages

Year	Percentage
2005	85 %
2006	100 %
2007	50 %
2008	40 %
2009	10 %
Average	57 %

1.3 Scope

This Environmental Assessment (EA) is being prepared to examine the impacts of approving a four year transfer and Warren Act contracts for the conveyance and delivery of 13,350 AF of PID's Transfer Water to SCVWD. The transfer and Warren Act contracts would involve Reclamation facilities from the DMC to the Santa Clara Conduit and would be completed by February 28, 2014.

PID is located entirely within Stanislaus County while SCVWD is located entirely within Santa Clara County (Figure 1-1).

PID has begun construction of a new district pipeline which extends from their Main Canal towards the DMC at Ward Avenue. At this time the pipeline ends on PID rights-of-way (ROW) and does not extend into federal ROW nor have federal funds been used in the construction of the pipeline. On March 19, 2008, PID signed an Initial Study and Negative Declaration (SCH#2008012076) for construction of this new pipeline. At present, PID has not applied for a license to cross Reclamation ROW with their pipeline and the pipeline is not needed in order to complete the Proposed Action. As there is no federal nexus and Reclamation has no discretion over the construction of this pipeline within PID ROW, the

pipeline is not part of the Proposed Action. Extension of the pipeline to the DMC would require a license from Reclamation and additional environmental analysis.

1.4 Potential Issues

This EA will analyze the affected environment of the Proposed Action in order to determine the potential impacts to the following resources:

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

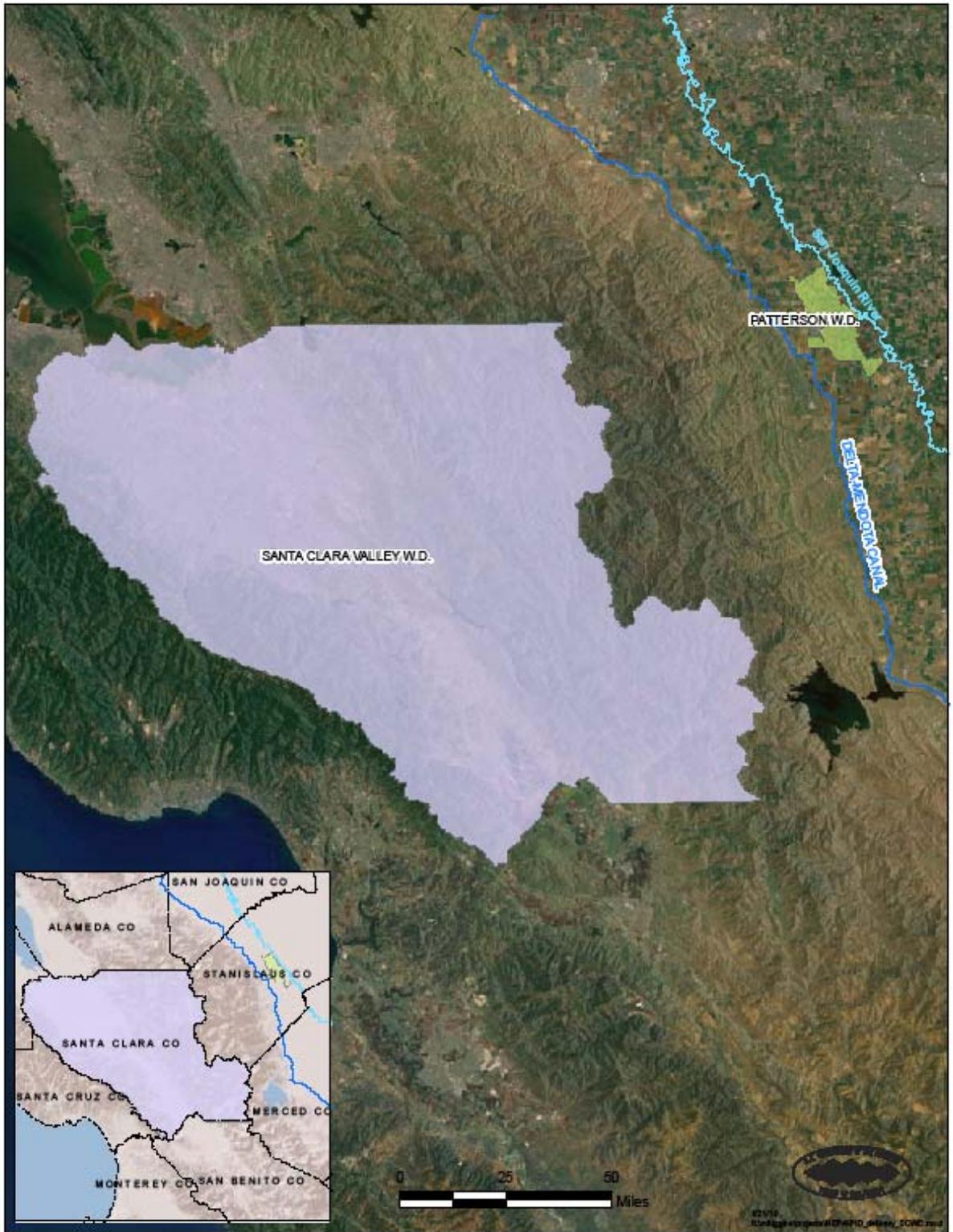


Figure 1-1 PID and SCVWD Location Map

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 over the next four years without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of PID's and SCVWD's CVP water service contracts. Under the No Action Alternative, PID could sell their non-CVP water to willing buyers and SCVWD could purchase additional non-CVP water supplies. It is not known at this time who would participate as a buyer or supplier, such actions are outside the scope of the EA and would require additional environmental analysis.

2.2 Proposed Action

Reclamation proposes to approve PID's delivery of up to 13,350 AF of its Transfer Water to SCVWD over a four year period (March 1, 2010 through February 28, 2014). Reclamation would also issue a Warren Act contract for conveyance of any non-CVP water delivered throughout this four-year period.

2.2.1 Transfer Water

In each year, PID would make its Replacement Water available first for use as Transfer Water, followed by its CVP allocation, and if necessary, its pre-1914 San Joaquin River water. A minimum of 4,000 AF would be delivered in each of the first three transfer years with the remaining 1,350 AF delivered in the last transfer year. Should PID receive a 100 percent CVP allocation during the first three years of this transfer period, an additional 2,000 AF may be added to the 4,000 AF to be transferred for a maximum transferable amount of 6,000 AF in a given year. No more than 3,337 AF of San Joaquin River water would be transferred in any given year.

The Proposed Action would be subject to the following conditions:

- Transfer Water would only be used for agricultural purposes;
- Transfer Water would only be used for beneficial purposes;
- Transfer Water would not be used to place untilled or new lands into production, nor to convert undeveloped land to other uses;
- the transfer would not significantly affect CVP, SCVWD and PID normal water system delivery operations; and

2.2.2 Conveyance of Replacement Water or CVP Water

Reclamation would facilitate this transfer by normally conveying the Transfer Water down the DMC from the Delta, but instead of being diverted into PID turnouts, the Transfer Water would be conveyed down the DMC to O'Neill Forebay. From O'Neill, the Transfer Water would be pumped into San Luis Reservoir and diverted to Reach 1 of the Pacheco Tunnel and then to the Pacheco Pumping Plant where it would be lifted into the Pacheco Conduit. From the Pacheco Conduit, the Transfer Water would be delivered to SCVWD via the Santa Clara Conduit and Tunnel. SCVWD would then convey the Transfer Water through their internal distribution system to their water users affected by the water drought shortages.

2.2.3 Conveyance of pre-1914 San Joaquin River Water

Pre-1914 San Joaquin River water would be pumped from PID's existing pumping facility at rivermile 98.5, subject to any regulatory requirements and/or conditions governing such diversions. The pumped water would be conveyed through PID's existing distribution system, transferred into PID's Lateral 5-South and delivered to the DMC. The Transfer Water would then be delivered to SCVWD as described in the previous section. The new pipeline could function as an alternative route for delivery of the Transfer Water to the DMC, should construction of the new pipeline be extended to the DMC at Ward Avenue. As previously discussed, the crossing of Reclamation ROW by the new pipeline would require a license from Reclamation an additional environmental analysis.

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

3.1.1.1 Patterson Irrigation District

PID's distribution system consists of 309 turnouts, 3.8 miles of unlined canal, 51.8 miles of concrete-lined canal, and 84 miles of pipeline. PID provides agricultural water to approximately 770 customers on about 12,800 acres. The district currently gets between 70 to 80 percent of its water supply from the San Joaquin River, with its remaining supply coming from groundwater, recirculation projects and CVP supplies. In 2008, the in-district demand was approximately 38,344 AF (see Table 3-1).

As a pre-1914 water rights holder PID has the authority and right under California law to divert from the San Joaquin River what water is needed as long as it is put to beneficial use. San Joaquin River water is pumped by PID uphill into its Main Canal through a series of pump stations and reservoir pools. Originally designed as settling basins to settle out silt from the San Joaquin River water source, the reservoirs have negligible storage capacity. The

Main Canal flows from east to west, and supplies 13 main laterals which flow north and south. The current Main Canal peak capacity is 200 cubic-feet per second (cfs). On average, PID pumps approximately 23,000 AF per year (AFY); although in 2008, the gross amount pumped by the district was 43,371 AF (see Table 3-1). In general, PID is 80 percent efficient at delivering San Joaquin River water to its landowners, which includes losses from evaporation and seepage.

Table 3-1 PID's 2008 Water Balance

Source	Gross Quantity Pumped/Available (AF)	Net Quantity Delivered (AF)*	In-District Demand (AF)	Out of District Transfers (AF)
San Joaquin River	43,371	34,697	34,697	0
CVP Water	6,600	6,600	0	6,600
Replacement Water	6,000	4,800	3,975	825
Groundwater	4,047	3,237	3,237	0
Total	60,018	42,734	41,909	7,425

*At 80 percent efficiency

PID also has a water service contract with Reclamation for 16,500 AFY of CVP water delivered from the DMC. As a result of a settlement reached between PID and Reclamation for the construction of Friant Dam and partial obstruction of natural flow from the San Joaquin River, PID receives an additional 6,000 AFY of Replacement Water from Reclamation via the DMC.

PID is located within the Delta-Mendota groundwater subbasin of the San Joaquin Valley Basin, and confined within the San Joaquin River Hydrologic Region. The Delta-Mendota groundwater subbasin covers a surface area of approximately 747,000 acres, spanning across all or parts of Stanislaus, Merced, Madera, and Fresno Counties. Changes in the Delta-Mendota groundwater subbasin level is evaluated by the State Department of Water Resources (DWR) by quarter township and computed through a custom DWR computer program using geostatistics (kriging). On average, the subbasin water level has increased by 2.2 feet total from 1970 through 2000 (DWR 2006). PID currently has seven district owned wells, with a combined flow rate of 33.5 cfs. PID and/or its overlying landowners generally pump groundwater as a last resort when surface supplies are not sufficient for irrigation demands. From 2000 through 2009, PID pumped an average of 2,436 AFY of groundwater for in-district demands. The lowest amount pumped, 634 AF, occurred in 2005 and the highest, 4,047 AF, in 2008 (PID 2009).

3.1.1.2 Santa Clara Valley Water District

SCVWD is a special district created by the State legislature to be responsible for water supply, flood protection, and watershed management in Santa Clara County, California. SCVWD has the same boundaries as Santa Clara County, covering about 1,300 square miles. SCVWD wholesales treated water and groundwater to 13 public and private water retailers that serve Santa Clara County. SCVWD also provides water directly to agricultural water users through groundwater recharge, and through a limited number of surface water turnouts. SCVWD's water supply consists of two primary sources: local supplies and imported water. Local supplies include captured surface runoff, groundwater, and recycled water. Most imported water comes to the County from the Sierra Nevada Mountains via the Delta and is

delivered by the CVP and SWP. Additionally, potable water is delivered to communities and agencies in northern Santa Clara County from the San Francisco Water Department (Hetch-Hetchy).

The SCVWD has two contracts for water delivery from the CVP. The first CVP contract was executed in 1977 for 152,500 AFY (Contract Number 7-07-20-W0023). The second contract is a partial assignment from Mercy Springs Water District executed in 1999 (Contract Number 14-06-3365A-IR3-B). SCVWD's annual contract amounts are subject to shortages caused by drought and environmental and regulatory actions such as the Central Valley Project Improvement Act, the Endangered Species Act (ESA), and Bay/Delta water quality actions. SCVWD's imported CVP deliveries from the San Felipe Division are conveyed through San Luis Reservoir in Merced County to the Coyote Creek Pump Station west of Anderson Reservoir via a series of pipelines and tunnels.

SCVWD has a contract with the DWR for 100,000 AFY from the SWP. Water is delivered via the Banks Pumping Plant in the southern Delta and the South Bay Aqueduct delivers the water to a terminal tank at the Penitencia Water Treatment Plant in east San Jose. SWP water is subject to shortages caused by drought conditions and environmental/regulatory actions in the Bay/Delta.

3.1.1.3 Central Valley Project Facilities

Delta Division The Delta Division provides for the transport of water through the central portion of the Central Valley, including the Delta. The main features of the division are the Delta Cross Channel, Contra Costa Canal, Tracy Pumping Plant, and the DMC, 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 Tracy Pumping Plant consists of an inlet channel, pumping plant, and discharge pipes. Water in the Delta is lifted 197 feet into the DMC. Each of the six pumps at Tracy is powered by a 22,500 horsepower motor and is capable of pumping 767 cfs. Power to run the huge pumps is supplied by CVP power plants. The water is pumped through three 15-foot-diameter discharge pipes and carried about one mile up to the DMC. The intake canal includes the Tracy Fish Screen, which was built to intercept downstream fish so they may be returned to the main channel to resume their journey to the ocean.

The DMC carries water southeasterly from the Tracy Pumping Plant along the west side of the San Joaquin Valley for irrigation supply, for use in the San Luis Unit, and to replace San Joaquin River water stored at Friant Dam and used in the Friant-Kern and Madera systems. The canal is about 117 miles long and terminates at the Mendota Pool, about 30 miles west of Fresno. The initial diversion capacity is 4,600 cfs, which is gradually decreased to 3,211 cfs at the terminus.

San Felipe Unit The San Felipe Unit of the CVP, in the central coastal area of California, services the Santa Clara Valley in Santa Clara County, the northern portion of San Benito County, the southern portion of Santa Cruz County, and the northern edge of Monterey County. Authorized in 1960, the Division provides supplemental water to 63,500 acres of land, in addition to 132,400 AF of water annually for M&I use. Water from San Luis Reservoir is transported to the Santa Clara-San Benito service area through Pacheco Tunnel

and other project features, which include 48.5 miles of closed conduits, two pumping plants, and one small reservoir. Provisions for future construction of about 25 miles of closed conduit to Santa Cruz and Monterey counties are included in the Division features.

3.1.1.4 San Joaquin River Water Quality

Water quality in various segments of the San Joaquin River below Friant Dam is degraded because of low flow, and discharges from agricultural areas, wildlife refuges, and wastewater treatment plants (Reclamation 2009). Below its confluence with the Merced River, San Joaquin River water quality generally improves at successive confluences with rivers draining the Sierra Nevada, particularly at confluences with the Merced, Tuolumne, and Stanislaus rivers (Reclamation 2009). In the relatively long reach between the Merced and Tuolumne rivers, mineral concentrations tend to increase because of inflows of agricultural drainage water, other wastewaters, and effluent groundwater (Dubrovsky et al. 1998; Reclamation 2009). PID is located between the confluence of the Tuolumne River and Vernalis.

In 2006, the Central Valley Regional Water Quality Control Board (CVRWQCB), in compliance with Section 303(d) of the Clean Water Act [33 USC Section 1313(d)], prepared a list of “impaired” water bodies in the State of California. The list was approved by the Environmental Protection Agency on June 28, 2007 (SWQCB 2010). The list includes a priority schedule for the development of total maximum daily loads (TMDL) for each contaminant or “stressor” impacting a particular water body. CVRWQCB has identified water quality impairments for the portion of the San Joaquin River between the Merced River confluence and the Stanislaus River (downstream of Vernalis) for several different contaminants including: boron, (di)parachlorophenyl trichlorethane (DDT), electrical conductivity (EC), Group A pesticides, mercury, selenium, exotic species, toxaphene, and unknown toxicity. TDML’s have not yet been reached for these contaminants; however, boron, chlorpyrifos, diazinon, EC, and selenium are being addressed by U.S. Environmental Protection Agency approved TMDLs (SWRCB 2010).

Surface water quality monitoring programs are currently being conducted by federal and State agencies along the restoration area of the San Joaquin River (Reclamation 2009). Water quality samples taken from Vernalis between October 2001 and December 2009 include: EC, TDS, boron, and selenium (see Table 3-2).

Table 3-2 San Joaquin River Water Quality at Vernalis from 2001-2009

	CFS	AF	EC (µS/cm)	TDS (mg/L)	Boron (µg/L)	Selenium (µg/L)
Maximum	28,149	1,675,000	965	600	800	2.3
Minimum	599	36,830	95	60	100	0.4
Average	3,204	192,694	572	355	300	0.9

µS/cm = microSiemens per centimeter
 µg/L = microgram per liter

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action Alternative, Reclamation would not approve the transfer between PID and SCVWD. Reclamation would continue to convey and deliver water via the DMC and San Felipe facilities to both SCVWD and PID pursuant to their respective CVP contracts and as water is available. Transfer Water would remain with PID and continue to be used to meet in-district irrigation demands or water transfers as has been done in the past. Any future transfers are speculative at this time and would require additional environmental analysis. There would be no impacts to federal facilities described under the Proposed Action as conditions would remain the same as existing conditions.

SCVWD would have to rely on their CVP and SWP allocations and/or purchase water from willing sellers; however, no sellers have been identified and the action is outside the scope of this EA. If other sources of supplemental water cannot be provided by SCVWD, additional groundwater pumping may become necessary. Under the No Action Alternative, private landowners in SCVWD may need to pump an additional 13,350 AF of groundwater over the next four years, which is the amount of surface water that they would have received under the Proposed Action. Annual pumped amounts would likely be much less. SCVWD overlies the Tracy and Delta-Mendota subbasin, both of which have had a relatively stable groundwater level; the Tracy subbasin for at least 10 years and the Delta-Mendota subbasin since 1970 as of 2000 (DWR 2006). This is in part due to the subbasin areas underlying SCVWD receiving applied water recharge as a result of irrigation and an Assembly Bill 3030 groundwater management plan adopted by the San Luis & Delta-Mendota Water Authority in 1997 of which both PID and SCVWD are members. Therefore, with the need for additional pumping there may be slight impacts to groundwater resources as a result of the No Action Alternative, but these impacts would likely be stabilized by irrigation recharge and the existing groundwater management plan.

3.1.2.2 Proposed Action

Under the Proposed Action, the maximum amount of water to be transferred in any one year would be 6,000 AF for a total transferred amount of up to 13,350 AF over the four year period. PID has prioritized Replacement Water followed by CVP water as the water to be transferred. San Joaquin River water would only be used for transfer in the event that PID does not have enough Replacement Water or CVP water allocated to them. No more than 3,337 AFY of San Joaquin River water would be transferred in any one year. On average, PID pumps approximately 23,000 AFY of San Joaquin River to meet in-district demands. Since the San Joaquin River water that may be used for the transfer would be well under the amount annually pumped by PID and no additional water would need to be pumped from the San Joaquin River in order to meet the transfer needs, there would be no adverse impact to PID's pre-1914 San Joaquin River water rights as a result of the Proposed Action. It is possible that due to hydrologic conditions, PID may need to pump additional San Joaquin River in order to meet in-district demands as it did in 2008; however, the additional water pumped would be consistent with historical fluctuations and within PID's water right. Consequently, there would be no adverse impacts to the San Joaquin River as a result of the Proposed Action.

Each year, PID would continue to receive the remaining balance of their Replacement Water and CVP contract supply from the DMC. No changes to the DMC would occur and conditions would remain the same as has historically occurred; therefore, there would be no adverse impacts to the DMC.

In the event that PID needs to make up for any shortfalls, individual landowners and/or the district would pump groundwater to make up the amount needed for irrigation. However, PID has had an excess water supply in past years and has only pumped groundwater as a last resort. As shown in Table 3-1, PID's pre-1914 water has made up the majority of water needed to meet in-district demands. PID does not expect to pump any additional groundwater as the transfer of 13,350 AF over four years to SCVWD would still leave PID with the ability to meet the irrigation needs of its water users. Therefore, there would be no adverse impacts to groundwater resources as a result of the Proposed Action.

All waters introduced and conveyed through federal facilities must meet Reclamation water quality standards. If, through monitoring, the pre-1914 San Joaquin River water pumped by PID fails to meet the criteria for discharging non-CVP water into federal facilities, the water would not be introduced into the DMC until subsequent testing has demonstrated that the water quality has been met by the criteria as outlined in Title 22 (see Appendix B). Therefore, there would be no adverse impacts to water quality as a result of the Proposed Action.

SCVWD would continue to receive their CVP supply from the Santa Clara Conduit as well as the additional 13,350 AF of Transfer Water delivered from PID via the DMC and San Felipe facilities. There would be no adverse impacts to any of the federal facilities involved in the transfer of PID's Transfer Water nor would the transfer impact the normal functions and operations of any CVP or district facilities. The Transfer Water would be used as a supplemental surface water supply for SCVWD's varied water resources in order to meet irrigation demands. The delivery of 13,350 AF of Transfer Water would reduce the need for SCVWD to pump groundwater in order to meet in-district demands which would have slight beneficial impacts to groundwater levels.

3.2 Land Use

3.2.1 Affected Environment

3.2.1.1 Patterson Irrigation District

PID is approximately 12,800 acres in size and is entirely an agricultural district growing a variety of orchard and row crops. It is anticipated that as the City of Patterson and the Interstate 5 corridor continue to grow, any new proposed development requiring municipal and industrial (M&I) water would be detached from the district. It is currently PID policy to require water users requesting M&I water to detach from the district. Most recently, the district detached 692 acres in July 2007 concurrently with the annexation of the same lands to the City of Patterson for urban development. Therefore, despite neighboring growth pressures, PID is expected to remain entirely an agricultural district.

3.2.1.2 Santa Clara Valley Water District

The Santa Clara Valley runs the entire length of the County from north to south, bounded by the Diablo Range to the east and the Santa Cruz Mountains to the west. The valley is bounded to the northwest by the southern reaches of San Francisco Bay and to the south by the Pajaro River. Most development and water use occurs on the 350-square-mile valley floor. The northern part of the valley, north of the Coyote Narrows, is extensively urbanized and houses over 90 percent of the County's 1.7 million residents and 13 of the County's 15 cities. With the exception of the cities of Morgan Hill and Gilroy, the southern part of the valley remains predominately rural with some low-density residential development. The 2008 Santa Clara County Agricultural Crop Report lists 229,608 acres used for agricultural purposes, including over 22,000 acres of irrigated crops. SCVWD has historically supported the continuation of agricultural activity by providing an "open space credit" to agricultural water users in its water rate structure.

3.2.2 Environmental Consequences

3.2.2.1 No Action

Under the No Action Alternative, PID would continue to use the Transfer Water as part of their varied water resources to irrigate existing farmlands. PID historically has and intends to continue to detach lands as a result of landowners requesting M&I water so that PID can remain an entirely agricultural district. Reclamation has no authority over land use changes in PID and any such change is not a result of the No Action Alternative. Conditions would remain the same as described in the affected environment; therefore, no changes to land use would occur in PID.

Without additional supplemental water, SCVWD may have to temporarily or permanently put crops out of production. Since the Transfer Water would have been used to irrigate crops, the No Action Alternative could result in negative impacts to land use in SCVWD.

3.2.2.2 Proposed Action

The Proposed Action would not result in any land use changes in PID because the district would still have sufficient water to meet the irrigation needs of its water users over the four year transfer period. Similar to the No Action Alternative, conditions would remain the same as existing conditions.

SCVWD would use the additional 13,350 AF of Transfer Water to irrigate and maintain their existing permanent crops. Therefore, there would be no adverse impacts to land use in SCVWD as a result of the Proposed Action.

3.3 Biological Resources

3.3.1 Affected Environment

This section analyzes the potential impacts to listed (under the federal ESA) species and habitats with the potential to occur in the study area. The following list (See Table 3-3) was obtained on January 26, 2010, by accessing the U.S. Fish and Wildlife Service (USFWS) Database: http://www.fws.gov/sacramento/es/spp_list.htm (Document Number: 100126035543). The list is for the following U.S. Geological Survey 7½ minute quadrangles which are overlapped by SCVWD and PID: Mariposa Peak, Three Sisters, San Felipe,

Chittenden, Watsonville East, Crevison Peak, Pacheco Pass, Mustang Peak, Mississippi Creek, Gilroy Hot Springs, Pacheco Peak, Mt. Sizer, Morgan Hill, Mt. Madonna, Gilroy, Santa Teresa Hills, Los Gatos, Laurel, Loma Prieta, Castle Rock Ridge, Crows Landing, Patterson, Mt. Boardman, Mt. Stakes, Eylar Mtn, Mt. Day, Lick Observatory, Isabel Valley, Calaveras Reservoir, Milpitas, San Jose West, San Jose East, Mountain View, Palo Alto, Mindego Hill, Cupertino, Westley, and Brush Lake (USFWS 2010). Reclamation further queried the California Natural Diversity Database for records of protected species within the project location (CNDDDB 2010). The two lists, in addition to other information within Reclamation's files were combined to create the following list (Table 3-3).

Table 3-3 Sensitive Species Reported in the Proposed Action Area

Species	Status¹	Summary basis for ESA determination^{2,3}
AMPHIBIANS		
California red-legged frog <i>Rana aurora draytonii</i>	T, X	Present. Documented as extant within Santa Clara Co. and Stanislaus Co. and Critical Habitat present. No construction of new facilities; no conversion of lands from existing uses.
California tiger salamander <i>Ambystoma californiense</i>	T, X	Present. Documented as extant within Santa Clara Co. Critical Habitat present. No construction of new facilities; no conversion of lands from existing uses.
BIRD		
burrowing owl <i>Athene cunicularia</i>	MBTA	Present. Documented as extant within project area and suitable habitat present. No construction of new facilities; no conversion of lands from existing uses.
California clapper rail <i>Rallus longirostris obsoletus</i>	E	Present. Documented as extant near San Francisco Bay within Santa Clara Co. Suitable habitat absent. No construction of new facilities; no conversion of lands from existing uses.
California least tern <i>Sternula antillarum browni</i>	E	Present. Documented as extant near San Francisco Bay within Santa Clara Co.
Least Bell's vireo <i>Vireo bellii pusillus</i>	E	Present. Documented as extant south of Gilroy and north of Pajaro River within Santa Clara Co.
Swainson's hawk <i>Buteo swainsoni</i>	MBTA	Possible. Documented as extant just outside of PID District along San Joaquin River. No construction of new facilities; no conversion of lands from existing uses.
western snowy plover <i>Charadrius alexandrinus nivosus</i>	T	Possible. Documented as extant near San Francisco Bay within Santa Clara Co.
FISH		
Central Valley Steelhead and Central California coastal steelhead <i>Oncorhynchus mykiss</i>	T, X, NMFS	Possible. Habitat is present for this species along hydrologic features from the San Francisco Bay. No natural waterways within the species' range will be affected by the proposed action.
INVERTEBRATES		
bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	T, X	Possible. CNDDDB records indicate this species and Critical Habitat exist along US Route 101 between the cities of San Jose and Gilroy.
MAMMALS		

salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	E	Possible. CNDDDB records indicate this species occurs near cities of Fremont and Palo Alto. No construction of new facilities; no conversion of lands from existing uses.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E	Possible. CNDDDB records indicate this species occurs in the project area. No construction of new facilities; no conversion of lands from existing uses.
PLANT		
California sea blite <i>Suaeda californica</i>	E	Possible. CNDDDB records indicate this species occurs along salt flats of Palo Alto. No construction of new facilities; no conversion of lands from existing uses.
Contra Costa goldfields <i>Lasthenia conjugens</i>	E, X	Absent. This species is believed to be extirpated from Santa Clara Co. Critical Habitat is located outside the project area.
Coyote ceanothus <i>Ceanothus ferrisae</i>	E	Present. Small population documented as extant within Morgan Hill Quad.
Metcalf Canyon jewelflower <i>Streptanthus albidus ssp. albidus</i>	E	Present. CNDDDB records indicate this species along US Route 101 between the cities of San Jose and Gilroy.
Tiburon paintbrush <i>Castilleja affinis ssp. neglecta</i>	E	Present. Small population documented as extant within Morgan Hill Quad.
<p>1 Status= Status of Federal protected species E: Listed as Endangered MBTA: Protected under the Migratory Bird Treaty Act NMFS: Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service T: Listed as Threatened X: Critical Habitat designated for this species</p> <p>2 Definition Of Occurrence Indicators Present: Species observed in area and habitat is present Possible: Species not observed in the last 10 years in area Absent: Species extirpated from area</p> <p>3 CNDDDB = California Natural Diversity Database 2010</p>		

3.3.2 Environmental Consequences

3.3.2.1 No Action

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

3.3.2.2 Proposed Action

Affects are similar to the No Action Alternative. Most of the habitat types required by species protected by the ESA do not occur in the project area. The Proposed Action would not involve the conversion of any land fallowed and untilled for three or more years. The Proposed Action also would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA). Due to capacity limitations and water quality restrictions in the DMC, there would be no effects on listed fish species. No critical habitat within the area would be impacted by the Proposed Action and so none of the primary constituent elements of any critical habitat would be affected.

Any encountered biological resources are likely to be those associated with actively cultivated land. Since no natural stream courses or additional surface water pumping would

occur, there would be no effects on listed fish species. The Replacement Water involved with the Proposed Action would not be used on native lands or on lands that have been fallowed for more than three consecutive years. Such actions would require subsequent environmental review.

The short duration of the water availability, the requirement that no native lands be converted without consultation with the USFWS, and the stringent requirements for transfers under applicable laws would preclude any impacts to wildlife, whether federally listed or not. In conclusion, the Proposed Action would not affect any federally listed species or any critical habitat, nor would it affect birds protected under the MBTA.

3.4 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 will 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 would have on historic properties, and consult with the State Historic Preservation Office, 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.

3.4.1 Affected Environment

The San Joaquin Valley and the Santa Clara Valley are 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 and Santa Clara Valley areas. It is possible that many cultural resources lie undiscovered within these areas. The San Joaquin Valley and Santa Clara Valley supported extensive populations of Native Americans, principally the Northern and Southern Valley Yokuts in the San Joaquin Valley and the Costanoan, Esselen, and Salinan in the Santa Clara Valley, during the prehistoric period. Cultural studies in the San Joaquin and Santa Clara Valley have been

limited. The conversion of land and intensive farming practices over the last century may have destroyed many Native American cultural sites.

The DMC is a component of the CVP which is being evaluated for the National Register.

3.4.2 Environmental Consequences

3.4.2.1 No Action

The No Action Alternative would result in the continued use of water under current conditions. There would be no impact to cultural resources under this action. Because Reclamation would not have an action, there would be no undertaking as defined by Section 301(7) of the NHPA resulting in no initiation of the Section 106 process.

3.4.2.2 Proposed Action

The Proposed Action is an administrative action that would allow for the flow of water through existing facilities to existing users. There would be no ground disturbance or modification needed to the existing facilities as a result of this action nor would there be any changes in cropping patterns or urban development. As a result there would be no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1). There would be no impacts to cultural resources as a result of implementing the Proposed Action.

3.5 Indian Trust Assets

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

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

3.5.1 Affected Environment

The nearest ITA is Lytton Rancheria approximately 37 miles north-northwest of the Proposed Action location.

3.5.2 Environmental Consequences

3.5.2.1 No Action

Under the No Action Alternative, Reclamation would not approve of the transfer between PID and SCVWD. Conditions would remain the same as existing conditions; therefore, there would be no impacts to ITA.

3.5.2.2 Proposed Action

Approval of the transfer between PID and SCVWD would not involve any construction and would utilize existing conveyance facilities; therefore, activities associated with the Proposed Action would not affect ITA.

3.6 Environmental Justice

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

3.6.1 Affected Environment

The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America, into the San Joaquin Valley. Agriculture and related businesses are the main industry in SCVWD and PID, which provides employment opportunities for these minority and/or disadvantaged populations. The areas around PID have stable economies based on local tomato, cereal, citrus, olive, and walnut products. The SCVWD's agricultural production is primarily nursery crops, mushrooms, bell peppers, cherries, and other fruit, vegetable and field crops.

3.6.2 Environmental Consequences

3.6.2.1 No Action

The No Action Alternative could result in harm to minority or disadvantaged populations within SCVWD. Lands could be temporarily or permanently taken out of agricultural production with a resulting reduction in the need for farm labor.

3.6.2.2 Proposed Action

Under the Proposed Action, the availability of additional Transfer Water would help maintain agricultural production and local employment in SCVWD. The Proposed Action would not affect low-income or disadvantaged populations within the districts by not causing dislocation, changes in employment, or increase flood, drought, or disease. There would be no changes to existing conditions. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts.

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. Therefore, there would be no adverse impacts to Environmental Justice from the Proposed Action.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The area located within PID is primarily rural agricultural land which provides farm-related jobs. There are small businesses that support agriculture, for example: feed and fertilizer sales, machinery sales and service, pesticide applicators, transport, packaging, marketing, etc. within the surrounding area. SCVWD lies entirely within

The northern part of SCVWD is extensively urbanized in the Santa Clara Valley, and 90 percent of the County's 1.7 million residents and 13 of the County's 15 cities are located within the northern portion of the 350-acre valley floor. The southern part of the County, except for the cities of Morgan Hill and Gilroy, remains primarily rural agricultural land which provides farm-related jobs. Similar to PID, there are small businesses that support agriculture, located primarily in the southern part of the County.

3.7.2 Environmental Consequences

3.7.2.1 No Action

Under the No Action Alternative, conditions would remain the same in PID and there would be no impacts to socioeconomic resources. Without supplemental water, landowners in SCVWD growing permanent crops would have to sustain the potential crop loss. The effects of permanently or temporarily putting crops out of production could result in minor impacts to agriculture-dependent businesses in SCVWD.

3.7.2.2 Proposed Action

The Proposed Action would provide additional supplemental water to SCVWD to sustain their existing crops and at the same time still provide sufficient irrigation water for landowners in PID. Conditions would remain the same as existing conditions and there would be no adverse impacts to socioeconomic resources.

3.8 Air Quality

Section 176 (C) of the Clean Air Act [CAA] (42 USC 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 USC 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.

3.8.1 Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB) and the San Francisco Bay Area Air Basin (SFBAAB). Air basins share a common "air shed," the

boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Despite years of improvements, neither the SJVAB nor the SFBAAB meets state and federal health-based air quality standards for volatile organic compounds (VOC)/reactive organic gases (ROG); however, both have reached attainment status for carbon monoxide (CO) (BAAQMD 2010; SJVAPCD 2010). Additionally, SFBAAB has reached attainment status for nitrous oxides (NO_x) but is unclassified for inhalable particulate matter less than 10 microns in diameter (PM₁₀) whereas; SJVAB has reached attainment status for PM₁₀ but not for NO_x (BAAQMD 2010; SJVAPCD 2010). To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the Bay Area Air Quality Management District (BAAQMD) is required by federal law to adopt stringent control measures to reduce emissions.

On November 30, 1993, the Environmental Protection Agency 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 thresholds covering the Proposed Action are presented in Table 3-4.

Table 3-4 Proposed Action Area General Conformity de minimis Thresholds

San Joaquin Valley General Conformity de minimis Thresholds			
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
San Francisco Bay Area General Conformity de minimis Thresholds			
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)	Attainment	50	274
PM ₁₀	Unclassified	100	548
CO	Attainment	100	548

Sources: SJVAPCD 2010; BAAQMD 2010; 40 CFR 93.153

3.8.2 Environmental Consequences

3.8.2.1 No Action

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

3.8.2.2 Proposed Action

Water that is moved from the Delta down the DMC to PID and from PID to SCVWD is done either via gravity or with the use of electrical pumps. The air quality emissions from electrical power have been considered in environmental documentation for the generating power plant. There are no emissions from electrical engines and therefore a conformity analysis is not required under the CAA and there would be no adverse impact on air quality.

3.9 Global Climate Change

3.9.1 Affected Environment

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 2008a)

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (CO₂), 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: CO₂, methane (CH₃), NO_x, and fluorinated gasses (EPA 2008a).

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 CO₂ and CH₃, 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 2008b).

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).

3.9.2 Environmental Consequences

3.9.2.1 No Action

Under the No Action Alternative, there would be no additional impacts to global climate change as there would be no change from existing conditions.

3.9.2.2 Proposed Action

Climate change is an environmental trend and for the purpose of this EA refers to changes in global or regional climate over time and is expected to have some effect on the snow pack of the Sierra Nevada and the run-off regime. Current data are not yet clear on the hydrologic changes and how they will affect the Delta Division of the CVP as well as other federal, state and local river operations within the action area. Water allocations are made dependent on hydrologic conditions and environmental requirements. Since operations and allocations are flexible, any changes in hydrologic conditions due to climate change would be within the respective operations' flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

3.10 Cumulative Impacts

Cumulative impacts result from incremental impacts of a Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action, the incremental effect of the Proposed Action was examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

Reclamation's action would be the approval of a four-year transfer and Warren Act contracts for delivery of PID's Transfer Water to SCVWD. Reclamation has approved transfers and Warren Act contracts in previous years when excess capacity was available (see Table 3-5).

Table 3-5 Warren Act Contracts and Transfers Proposed between 2007-2009

	2006	2007	2008	2009
Warren Acts	3	9	6	15
Transfers	7	4	4	8
Used DMC	1	5	5	2

In 2009, Reclamation received 15 requests for Warren Act contracts and 8 requests for transfers. Two of these requests propose to use the DMC as a conveyance facility. Many of these requests are still under analysis and have not been completed at this time. Reclamation did approve the transfer of 3,700 AF of PID's Replacement Water to Del Puerto Water Storage District via the DMC.

Requests still pending for use of the DMC include:

- A 40-year Warren Act contract for conveyance of 4,500 AFY of Byron Bethany Irrigation District's non-CVP Delta water through the DMC to the City of Tracy's Water Treatment Plant. This proposed action includes an easement for placement of a new discharge pipeline at the headwall of the DMC.
- A transfer of up to 20,500 AF of Central California Irrigation District's (CCID) Exchange Contract CVP supplies to Westlands Water District, San Luis Water District, Panoche Water District, and Del Puerto Water District for the period April

through December 2010 and April through December 2011. Certain landowners within CCID would pump up to 75 cfs of groundwater to meet in-district demands in lieu of CCID taking surface water deliveries. The groundwater would be discharged into CCID's conveyance system freeing up its CVP water under the San Joaquin Exchange Contractor's Contract to be delivered to the districts via the DMC and/or the San Luis Canal.

- PID has requested a temporary five-year Warren Act contract for conveyance and storage of up to 10,000 AFY of their pre-1914 San Joaquin River water between Contract Water Years 2010 through 2015 (March 1, 2010-February 28, 2016). The additional non-CVP water conveyed in the DMC and stored in San Luis Reservoir would allow supplemental non-CVP water supplies to irrigate crops within their district boundaries.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies and this drives requests for water service actions. Water districts aim to provide water to their customers based on available water supplies and timing, all while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and a myriad of water service actions are approved and executed each year to facilitate water needs. It is likely that in 2010, more districts will request transfers and Warren Act contracts since it may be a dry year and non-CVP water is needed to supplement the reduced CVP supply. Additionally, in accordance with the Warren Act contract, Reclamation would continue to make these contracts available to requesting districts in future years, given that each district meets present and future requirements for Warren Act contracts. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

This is a four-year action, and the cumulative amount PID is limited to under the Proposed Action is 13,350 AF. However, PID can request a Warren Act contract separate from this Proposed Action for up to 10,000 AF of non-CVP water. Any additional Warren Acts would be analyzed in a separate environmental document and would be subject to available capacity; therefore, the Proposed Action would not result in cumulative effects to resources beyond historical fluctuations and conditions.

Section 4 Consultation and Coordination

4.1 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. The Proposed Action does not involve federal water development projects. Therefore the FWCA does not apply.

4.2 Endangered Species Act (16 USC § 1531 et seq.)

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

The Proposed Action would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species. In addition, the short duration of the water availability, the requirement that no native lands be converted without consultation with the USFWS, and the stringent requirements for transfers under applicable laws would prevent any adverse impact to any federally listed species or any critical habitat.

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

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

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

The Proposed Action involves redistributing water through existing Federal facilities. There would be no modification of water conveyance facilities and no activities that would result in new construction. There would be no impacts to cultural resources.

4.4 Indian Trust Assets

ITA are legal interests in property held in trust by the United States for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITA can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the United States is the trustee. By definition, ITA cannot be sold, leased, or otherwise encumbered without approval of the United States. The characterization and application of the United States trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

The Proposed Action would not affect ITA because there are none located in the Proposed Project area. The nearest ITA is Lytton Rancheria approximately 37 miles north-northwest of the Proposed Action location.

4.5 Migratory Bird Treaty Act (16 USC § 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 will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would 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 MBTA; therefore, the Proposed Action would have no effect on birds protected by the MBTA.

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

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would deliver water to existing irrigated agricultural lands and would not impact wetlands and/or floodplains.

4.7 Clean Air Act (42 USC § 7506 (C))

Section 176 of the CAA requires that 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 SIP required under Section 110 (a) of the CAA (42 USC § 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. The Proposed Action would not involve any construction or land disturbing activities that could lead to fugitive dust emissions and/or exhaust emissions associated with the operations of heavy machinery. The Transfer Water would either be conveyed by gravity or pumped via electric motors. The air quality emissions from electrical power have been considered in environmental documentation for the generating power plant. There are no emissions from electrical motors and therefore a conformity analysis is not required under the CAA and there would be no impact on air quality.

4.8 Clean Water Act (16 USC § 703 et seq.)

Section 401

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

No pollutants would be discharged into any navigable waters under the Proposed Action so no permits under Section 401 of the CWA are required.

Section 404

Section 404 of the CWA authorizes the U. S. Army Corps of Engineers to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States” (33 USC § 1344). No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 are not required.

Section 5 List of Preparers and Reviewers

Rain Healer, Natural Resource Specialist, SCCAO
Cathy James, Repayment Specialist, TO-442
Jennifer Lewis, Wildlife Biologist, SCCAO
Adam Nickels, Archaeologist, MP-153
Patricia Rivera, ITA, MP-400
Mike Kinsey, Supervisory Wildlife Biologist, SCCAO

Section 6 References

Anderson, J, F Chung, M Anderson, L Brekke, D Easton, M Ejetal, R Peterson, and R Snyder. 2008. Progress on Incorporating Climate Change into Management of California’s Water Resources. *Climatic Change* 87(Suppl 1):S91–S108 DOI 10.1007/s10584-007-9353-1

BAAQMD. 2010. Air Quality Standards and Attainment Status. Website: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm Accessed: January 22, 2010.

California Air Resources Board. 2009. California Air Basins. Website: <http://www.arb.ca.gov/knowzone/basin/basin.htm> Accessed: January 22, 2010.

California Natural Diversity Database (CNDDB). 2010. RareFind 3, Version 3.1.1

(January 2, 2010 update). California Department of Fish and Game, Sacramento, CA

Dubrovsky, Neil M., Charles R. Kratzer, Larry R. Brown, Jo Ann M. Gronberg, Karen R. Burow. 1998. Water Quality in the San Joaquin-Tulare Basins, California, 1992-95. Website: <http://water.usgs.gov/pubs/circ1159>, updated April 20, 1998.

DWR. 2006. California Groundwater Bulletin 118. Website: http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/pdfs_desc/5-22.14.pdf. Accessed: January 21, 2010.

EPA. 2008a. Climate Change, Basic Information. Website: <http://www.epa.gov/climatechange/basicinfo.html>. Accessed: January 25, 2010.

EPA. 2008b. Climate Change, Science. Website: <http://www.epa.gov/climatechange/science/index.html>. Accessed: January 25, 2010.

Patterson Irrigation District. 2009. Initial Study and Negative Declaration. *Patterson Irrigation District Water Transfer to Santa Clara Valley Water District* (SCH#2009112091).

Reclamation. 1997. Draft Programmatic Environmental Impact Statement. September, 1997.

Reclamation. 2007. United States Bureau of Reclamation. Website: <http://www.usbr.gov/dataweb/html/friant.html>. Accessed: January 21, 2010.

Reclamation. 2009. Final Environmental Assessment/Initial Study. *San Joaquin River Restoration Project Water Year 2010 Interim Flows Project*. Mid-Pacific Region.

SCVWD. 2005. *Urban Water Management Plan*. Website: <http://www.valleywater.org>. Accessed: January 25, 2010.

SJVAPCD. 2010. Ambient Air Quality Standards and Valley Attainment Status. Website: <http://www.valleyair.org/aqinfo/attainment.htm>. Accessed: January 22, 2010.

State Water Quality Control Board (SWQCB). 2010. Total Maximum Daily Load Program. Website: http://www.swrcb.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml. Accessed: February 2010.

Tetra Tech. 2000. Draft EA for Eastside/Westside Water Transfer/Exchange. Prepared for Reclamation.

U.S. Fish and Wildlife Service. 2010. Species List. Website: http://www.fws.gov/sacramento/es/spp_list.htm. Accessed: February 2010.

DRAFT ENVIRONMENTAL ASSESSMENT

*FOUR YEAR TRANSFER AND WARREN ACT FOR UP TO 13,350 ACRE-FEET OF
PATTERSON IRRIGATION DISTRICT'S AVAILABLE SURFACE WATER SUPPLY TO
SANTA CLARA VALLEY WATER DISTRICT*

Appendix A
Environmental Documents

February 2010

Healer, Rain L

From: Nickels, Adam M
Sent: Monday, January 25, 2010 10:56 AM
To: Healer, Rain L; Lewis, Jennifer; Barnes, Amy J; Bruce, Brandee E; Goodsell, Joanne E; Leigh, Anastasia T; Overly, Stephen A; Ramsey, Dawn
Subject: RE: EA-09-172 PID transfer to SCVWD
Attachments: CR Comments for EA 09-172.doc

Project No 10-SCAO-118

Rain:

I have reviewed the project description and proposed action for the EA-09-172. The no action and proposed alternative will have no impact on cultural resources. The proposed action is an administrative action resulting in the use of existing water supplies through existing facilities. I have attached to this email the cultural resource documentation needed for the draft/final EA. Be advised, any changes to the proposed alternative may require additional consideration pursuant to Section 106 of the NHPA. Please include this documentation with the EA.

This email is intended to convey the completion of the Section 106 process for this undertaking.

Sincerely,

Adam M. Nickels, M.S.
Archeologist
Bureau of Reclamation
Mid-Pacific Regional Office, MP-153
2800 Cottage Way
Sacramento, California 95825

Phone: 916.978.5053
Fax: 916978.5055

From: Healer, Rain L
Sent: Monday, January 25, 2010 10:13 AM
To: Lewis, Jennifer; Barnes, Amy J; Bruce, Brandee E; Goodsell, Joanne E; Leigh, Anastasia T; Nickels, Adam M; Overly, Stephen A; Ramsey, Dawn
Subject: EA-09-172 PID transfer to SCVWD

I have attached the project description for EA-09-172 Patterson Irrigation District Four Year Transfer of CVP or Replacement Water to Santa Clara Valley Water District for your review.

Cost authority: A1R-1752-9652-220-03-9-5

Rain L. Healer
Natural Resource Specialist
Bureau of Reclamation
1243 N Street, SCC 413
Fresno, CA 93721
(559) 487-5196
rhealer@usbr.gov

Healer, Rain L

From: Rivera, Patricia L
Sent: Monday, February 01, 2010 10:22 AM
To: Healer, Rain L
Subject: RE: Updated project description for previous ITA request

Rain,

I reviewed the proposed action to approve Patterson Irrigation District's (PID) delivery of up to 13,350 acre-feet (AF) of its Central Valley Project (CVP) water, Replacement Water, pre-1914 San Joaquin River water, and groundwater (henceforth known as Transfer Water) to SCVWD over a four year period (March 1, 2010 through February 28, 2014). Reclamation would also issue a Warren Act contract for conveyance of any non-CVP water delivered throughout this four-year period. A minimum of 4,000 AF would be delivered in each of the first three transfer years with the remaining 1,350 AF delivered in the last transfer year. Should PID receive a 100 percent allocation during the first three years of this transfer period, an additional 2,000 AF may be added to the 4,000 AF to be transferred for a maximum transferable amount of 6,000 AF in a given year.

Reclamation would facilitate this transfer by normally conveying the Transfer Water down the Delta-Mendota Canal (DMC) from the San Joaquin-Sacramento River Delta, but instead of being diverted into PID turnouts, additional points-of-delivery would convey up to 13,350 AF of PID's Transfer Water into the existing SCVWD turnout along the DMC at milepost 93.25R over the four-year transfer period. SCVWD would then convey the Transfer Water through their internal distribution system to their water users affected by the water drought shortages.

The Proposed Action would be subject to the following conditions:

- Transfer Water would only be used for agricultural purposes;
- Transfer Water would only be used for beneficial purposes;
- Transfer Water would not be used to place untilled or new lands into production, nor to convert undeveloped land to other uses;
- the transfer would not significantly affect CVP, SCVWD and PID normal water system delivery operations;
- there would be no construction of any new water diversion or conveyance facilities for the transfer; and
- there would be no introduction of non-CVP water into CVP facilities.

The proposed action does not affect Indian Trust Assets. The nearest ITA is Lytton Rancheria approximately 37 miles NNW of the project location.

Patricia

Project: EA-09-172 Four Year Transfer and Warren Act for up to 13,350 acre-feet of Patterson Irrigation District's Available Surface Water Supply to Santa Clara Valley Water District

ESA Effects Analysis

Reclamation proposes to approve Patterson Irrigation District's delivery of up to 13,350 AF of its Transfer Water to Santa Clara Valley Water District over a four year period (March 1, 2010 through February 28, 2014). Reclamation would also issue a Warren Act contract for conveyance of any non- Central Valley Project water delivered throughout this four-year period.

California Department of Fish and Game Natural Diversity Database (CNDDDB 2010) and U. S. Fish and Wildlife Service Database: http://www.fws.gov/sacramento/es/spp_list.htm records were searched on January 26, 2010 for listed species within the vicinity of the Project area.

Habitat modification, species introduction, and overfishing of fishery resources are major factors producing changes in habitat within the project area. These factors and anthropogenic activities within the project area have adversely affected the resources in the area. As a result of this large-scale conversion of native habitats, many species including special-status species have been displaced or extirpated from the region.

The Proposed Action would not involve the conversion of any land fallowed and untilled for three or more years. The Proposed Action also would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act. Due to capacity limitations and water quality restrictions in the Delta-Mendota Canal, there would be no effects on listed fish species. Additionally, no change in diversions of water from the San Joaquin River will occur as a result of the Proposed Action; therefore, there will be no effects on special-status fish species or any of the primary constituents of its designated critical habitat, or any other listed species. No critical habitat within the area would be affected by the Proposed Action and so none of the primary constituent elements of any critical habitat would be affected.

Thank you,

Jennifer L. Lewis

References

CNDDDB (California Department of Fish and Game Natural Diversity Database). 2009. California Department of fish and Game's Natural Diversity Database, Version 3.1.1. RareFind 3. May 2, 2009.

DRAFT ENVIRONMENTAL ASSESSMENT

*FOUR YEAR TRANSFER AND WARREN ACT FOR UP TO 13,350 ACRE-FEET OF
PATTERSON IRRIGATION DISTRICT'S AVAILABLE SURFACE WATER SUPPLY TO
SANTA CLARA VALLEY WATER DISTRICT*

Appendix B
Title 22 Water Quality Standards

February 2010

U.S. Bureau of Reclamation
 Friant Water Authority
 Friant Division, California
 Water Quality Monitoring Requirements

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
Primary Constituents (CCR § 64431)					
Aluminum	µg/L	EPA 200.7	1,000	1	7429-90-5
Antimony	µg/L	EPA 200.8	6	1	7440-36-0
Arsenic	µg/L	EPA 200.8	10	16	7440-38-2
Asbestos	MFL > 10µm	EPA 100.2	7	1	1332-21-4
Barium	µg/L	EPA 200.7	1,000	1	7440-39-3
Beryllium	µg/L	EPA 200.7	4	1	7440-41-7
Cadmium	µg/L	EPA 200.7	5	1	7440-43-9
Chromium	µg/L	EPA 200.7	50	1	7440-47-3
Cyanide	µg/L	EPA 335.4	150	1	57-12-5
Fluoride	mg/L	EPA 300.1	2	1	16984-48-8
Mercury (inorganic)	µg/L	EPA 245.1	2	1	7439-97-6
Nickel	µg/L	EPA 200.7	100	1	7440-02-0
Nitrate (as NO ₃)	mg/L	EPA 300.1	45	1	7727-37-9
Total Nitrate + Nitrite (as Nitrogen)	mg/L	EPA 353.2	10	1	
Nitrite (as Nitrogen)	mg/L	EPA 300.1	1	1	14797-65-0
Selenium	µg/L	EPA 200.8	50	1	7782-49-2
Thallium	µg/L	EPA 200.8	2	1	7440-28-0
Secondary Constituents (CCR § 64449)					
Aluminum	µg/L	EPA 200.7	200	6	7429-90-5
Chloride	mg/L	EPA 300.1	250/500/600	7	16887-00-6
Color	units	SM 2120 B	15	6	
Copper	µg/L	EPA 200.7	1,000	6	7440-50-8
Foaming agents (MBAS)	mg/L	SM 5540 C	0.5	6	
Iron	µg/L	EPA 200.7	300	6	7439-89-6
Manganese	µg/L	EPA 200.7	50	6	7439-96-5
Methyl-tert-butyl ether (MtBE)	µg/L	EPA 524.2	5	6	1634-04-4
Odor - Threshold	threshold units	SM 2150 B	3	6	
Silver	µg/L	EPA 200.7	100	6	7440-22-4
Specific conductance (EC)	µS/cm	SM 2510 B	900/1600/2200	7	
Sulfate	mg/L	EPA 300.1	250/500/600	7	14808-79-8
Thiobencarb	µg/L	EPA 525.2	1	6	28249-77-6
Total dissolved solids (TDS)	mg/L	SM 2540 C	500/1000/1500	7	
Turbidity	NTU	EPA 180.1	5	6	
Zinc	mg/L	EPA 200.7	5	6	7440-66-6

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
Other required analyses (CCR § 64449 (b)(2); CCR § 64670)					
Bicarbonate	mg/L	SM 2320B		8	
Calcium	mg/L	SM3111B		8,12	7440-70-2
Carbonate	mg/L	SM 2320B		8	
Copper	mg/L	EPA 200.7	1.3	14	7440-50-8
Hardness	mg/L	SM 2340 B		8	
Hydroxide alkalinity	mg/L	SM 2320B		8,12	
Lead	mg/L	EPA 200.8	0.015	14	7439-92-1
Magnesium	mg/L	EPA 200.7		8	7439-95-4
Orthophosphate	mg/L	EPA 365.1		12	
pH	units	EPA 150.1		8,12	
Silica	mg/L	EPA 200.7		12	
Sodium	mg/L	EPA 200.7		8	7440-23-5
Temperature	degrees C	SM 2550		12	
Radiochemistry (CCR § 64442)					
Radioactivity, Gross Alpha	pCi/L	SM 7110C	15	3	
Microbiology					
Cryptosporidium	org/liter		No MCL, measure for presence (surface water only)		
Fecal Coliform	MPN/100ml		No MCL, measure for presence (surface water only)		
Giardia	org/liter		No MCL, measure for presence (surface water only)		
Total Coliform bacteria	MPN/100ml		No MCL, measure for presence (surface water only)		
Organic Constituents (CCR § 64444)					
EPA 504.1 method					
Dibromochloropropane (DBCP)	µg/L	EPA 504.1	0.2	4	96-12-8
Ethylene dibromide (EDB)	µg/L	EPA 504.1	0.05	4	206-93-4
EPA 505					
Chlordane	µg/L	EPA 505	0.1	4	57-74-9
Endrin	µg/L	EPA 505	2	4	72-20-8
Heptachlor	µg/L	EPA 505	0.01	4	76-44-8
Heptachlor epoxide	µg/L	EPA 505	0.01	4	1024-57-3
Hexachlorobenzene	µg/L	EPA 505	1	4	118-74-1
Hexachlorocyclopentadiene	µg/L	EPA 505	50	4	77-47-4
Lindane (gamma-BHC)	µg/L	EPA 505	0.2	4	58-89-9
Methoxychlor	µg/L	EPA 505	30	4	72-43-5
Polychlorinated biphenyls	µg/L	EPA 505	0.5	4	1336-36-3
Toxaphene	µg/L	EPA 505	3	4	8001-35-2
EPA 508 Method					
Alachlor	µg/L	EPA 508.1	2	4	15972-60-8
Atrazine	µg/L	EPA 508.1	1	4	1912-24-9
Simazine	µg/L	EPA 508.1	4	4	122-34-9

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
EPA 515.3 Method					
Bentazon	µg/L	EPA 515	18	4	25057-89-0
2,4-D	µg/L	EPA 515.1-4	70	4	94-75-7
Dalapon	µg/L	EPA 515.1-4	200	4	75-99-0
Dinoseb	µg/L	EPA 515.1-4	7	4	88-85-7
Pentachlorophenol	µg/L	EPA 515.1-4	1	4	87-86-5
Picloram	µg/L	EPA 515.1-4	500	4	1918-02-1
2,4,5-TP (Silvex)	µg/L	EPA 515.1-4	50	4	93-72-1
EPA 524.2 Method (Volatile Organic Chemicals)					
Benzene	µg/L	EPA 524.2	1	4	71-43-2
Carbon tetrachloride	µg/L	EPA 524.2	0.5	4	56-23-5
1,2-Dibromomethane	µg/L	EPA 524.2	0.05		106-93-4
1,2-Dichlorobenzene	µg/L	EPA 524.2	600	4	95-50-1
1,4-Dichlorobenzene	µg/L	EPA 524.2	5	4	106-46-7
1,1-Dichloroethane	µg/L	EPA 524.2	5	4	75-34-3
1,2-Dichloroethane	µg/L	EPA 524.2	0.5	4	107-06-2
1,1-Dichloroethylene	µg/L	EPA 524.2	6	4	75-35-4
cis-1,2-Dichloroethylene	µg/L	EPA 524.2	6	4	156-59-2
trans-1,2-Dichloroethylene	µg/L	EPA 524.2	10	4	156-60-5
Dichloromethane	µg/L	EPA 524.2	5	4	75-09-2
1,2-Dichloropropane	µg/L	EPA 524.2	5	4	78-87-5
1,3-Dichloropropene	µg/L	EPA 524.2	0.5	4	542-75-6
Ethylbenzene	µg/L	EPA 524.2	300	4	100-41-4
Methyl-tert-butyl ether (MtBE)	µg/L	EPA 524.2	13	4	1634-04-4
Monochlorobenzene	µg/L	EPA 524.2	70	4	108-90-7
Styrene	µg/L	EPA 524.2	100	4	100-42-5
1,1,2,2-Tetrachloroethane	µg/L	EPA 524.2	1	4	79-34-5
Tetrachloroethylene (PCE)	µg/L	EPA 524.2	5	4	127-18-4
Toluene	µg/L	EPA 524.2	150	4	108-88-3
1,2,4-Trichlorobenzene	µg/L	EPA 524.2	5	4	120-82-1
1,1,1-Trichloroethane	µg/L	EPA 524.2	200	4	71-55-6
1,1,2-Trichloroethane	µg/L	EPA 524.2	5	4	79-00-5
Trichloroethylene (TCE)	µg/L	EPA 524.2	5	4	79-01-6
Trichlorofluoromethane	µg/L	EPA 524.2	150	4	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	EPA 524.2	1,200	4	76-13-1
Total Trihalomethanes	ug/L	EPA 524.2	80	10	
Vinyl chloride	µg/L	EPA 524.2	0.5	4	75-01-4
Xylene(s)	µg/L	EPA 524.2	1,750	4	1330-20-7
EPA 525.2 Method					
Benzo(a)pyrene	µg/L	EPA 525.2	0.2	4	50-32-8
Di(2-ethylhexyl)adipate	µg/L	EPA 525.2	400	4	103-23-1
Di(2-ethylhexyl)phthalate	µg/L	EPA 525.2	4	4	117-81-7
Molinate	µg/L	EPA 525.2	20	4	2212-67-1
Thiobencarb	µg/L	EPA 525.2	70	4	28249-77-6
EPA 531.1 Method					
Carbofuran	µg/L	EPA 531.1-2	18	4	1563-66-2
Oxamyl	µg/L	EPA 531.1-2	50	4	23135-22-0

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
EPA 547 Method					
Glyphosate	µg/L	EPA 547	700	4	1071-83-6
EPA 548.1 Method					
Endothal	µg/L	EPA 548.1	100	4	145-73-3
EPA 549.2 Method					
Diquat	µg/L	EPA 549.2	20	4	85-00-7
EPA 613 Method					
2,3,7,8-TCDD (Dioxin)	µg/L	EPA 1613	0.00003	4	1746-01-6

Source Data:

Adapted from Marshack, Jon B. August 2003. A Compilation of Water Quality Goals. Prepared for the California Environmental Protection Agency, Regional Water Quality Control Board.

U.S. Bureau of Reclamation
 Friant Water Authority
 Friant Division, California
 Water Quality Monitoring Requirements

Table 2b. Unregulated Chemicals (CCR § 64450)

CONSTITUENT OR PARAMETER	Units	Recommended Method	California Department of Health Services		CAS Registry Number	
			Notification Level	Response Level		
Boron	mg/L	EPA 200.7	1	9, 17	10	7440-42-8
n-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	104-51-8
sec-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	135-98-8
tert-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	98-06-6
Carbon disulfide	µg/L		160	17	1,600	
Chlorate	µg/L	EPA 300.1	0.8	17	8	
2-Chlorotoluene	µg/L	EPA 524.2	140	17	1,400	95-49-8
4-Chlorotoluene	µg/L	EPA 524.2	140	17	1,400	106-43-4
Dichlorofluoromethane (Freon 12)	µg/L	EPA 524.2	1,000	9,17	10,000	75-43-4
1,4-Dioxane	µg/L	SM 8270	3	17	300	123-91-1
Ethylene glycol	µg/L	SM 8015	1,400	17	14,000	107-21-1
Formaldehyde	µg/L	SM 6252	100	17	1,000	50-00-0
n-Propylbenzene	µg/L		260	17	2,600	
HMX	µg/L	SM 8330	350	17	3,500	2691-41-0
Isopropylbenzene	µg/L		770	17	7,700	
Manganese	mg/L		1	17	5	
Methyl isobutyl ketone	µg/L		120	17	1,200	
Napthalene	µg/L	EPA 524.2	17	17	170	91-20-3
n-nitrosodiethylamine (NDEA)	µg/L	1625	0.01	17	0.1	
n-nitrosodimethylamine (NDMA)	µg/L	1625	0.01	17	0.2	
n-nitroso-n-propylamine (NDPA)	µg/L	1625	0.01	17	0.5	
Perchlorate	µg/L	EPA 314	6	9, 17	60	13477-36-6
Propachlor	µg/L	EPA 507 or 525	90	17	900	1918-16-7
p-Isopropyltoluene	µg/L	EPA 524.2	770	17	7,700	99-87-6
RDX	µg/L	SM 8330	0.30	17	30	121-82-4
tert-Butyl alcohol (ethanol)	µg/L	EPA 524.2	12	9,17	1,200	75-65-0
1,2,3-Trichloropropane (TCP)	ug/L	EPA 524.2	0.005	9,17	0.5	96-18-4
1,2,4-Trimethylbenzene	µg/L	EPA 524.2	330	17	3,300	95-63-6
1,3,5-Trimethylbenzene	µg/L	EPA 524.2	330	17	3,300	95-63-6
2,4,6-Trinitrotoluene (TNT)	µg/L	SM 8330	1	17	100	
Vanadium	mg/L	EPA 286.1	0.05	9,17	0.5	7440-62-2

Revised: 05/17/2007

**U.S. Bureau of Reclamation
Friant Water Authority
Friant Division, California
Water Quality Monitoring Requirements**

Notes for Tables 2a and 2b

Title 22. California Code of Regulations, California Safe Drinking Water Act and Related Laws and Regulations. February 2007.
<http://www.dhs.ca.gov/ps/ddwem/publications/lawbook/PDFs/dwregulations-02-06-07.pdf>

- [1] Table 64431-A. Maximum Contaminant Levels, Inorganic Chemicals
- [2] Table 64432-A. Detection Limits for Purpose of Reporting (DLRs) for Regulated Inorganic Chemicals
- [3] Table 64442. Radionuclide Maximum contaminant Levels (MCLs) and Detection Levels for Reporting (DLRs)
- [4] Table 64444-A. Maximum Contaminant Levels Organic Chemicals
- [5] Table 64445.1-A. Detection Limits for Reporting (DLRs) for Regulated Organic Chemicals
- [6] Table 64449-A. Secondary Maximum Contaminant Levels "Consumer Acceptance Levels"
- [7] Table 64449-B. Secondary Maximum Contaminant Levels "Consumer Acceptance Levels"
- [8] § 64449(b)(2)
- [9] Table 64450. Unregulated Chemicals
- [10] Appendix 64481-A. Typical Origins of Contaminants with Primary MCLs
- [11] Table 64533-A. Maximum Contaminant Levels and Detection Limits for Reporting Disinfection Byproducts
- [12] § 64670.(c)
- [13] Table 64678-A. DLRs for Lead and Copper
- [14] § 64678 (d)
- [15] § 64678 (e)
- [16] New Federal standard as of 1/23/2006
- [17] Dept Health Services Drinkig Water Notification Levels (June 2006)