

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Warren Act Contract for Conveyance from Turlock to Del Puerto Water District

EA-13-050



U.S. Department of the Interior
Bureau of Reclamation

April 2016

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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

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Section 1 Introduction

The Bureau of Reclamation (Reclamation) provided the public with an opportunity to comment on the Draft Finding of No Significant Impact (FONSI) and Draft Environmental Assessment (EA) between April 1, 2014 and May 1, 2014. No comments were received. Changes between this Final EA and the Draft EA, which are not minor editorial changes, are indicated by vertical lines in the left margin of this document.

1.1 Background

The State of California is currently experiencing unprecedented water management challenges due to severe drought in recent years. On January 17, 2014, the Governor proclaimed a Drought State of Emergency (State of California 2014). On December 22, 2014, provisions within this proclamation were extended until May 31, 2016. On April 1, 2015, following the lowest snowpack ever recorded in California and the ongoing drought, the Governor proclaimed a second Drought State of Emergency and directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent (State of California 2015a). On April 23, 2015 and May 1, 2015, the State Water Resources Control Board issued curtailment notices to junior water rights holders in the San Joaquin River watershed and the Delta, respectively. The curtailment notices require junior water rights holders to stop diverting water from the watershed in order to allow it to flow to more senior water-right holders, as required by state law (State of California 2015a). On June 12, 2015, the State Water Resources Control Board issued curtailment notices to senior water rights holders with a priority date of 1903 or later in the San Joaquin and Sacramento watersheds and the Delta (State of California 2015b).

Del Puerto Water District (Del Puerto) is a Central Valley Project (CVP) Contractor located on the west side of the San Joaquin Valley, south of the Sacramento-San Joaquin Delta (Delta). Del Puerto's water supplies have been reduced in recent years because of regulatory limitations and adverse hydrologic conditions. As a result, Del Puerto is pursuing additional supplies for their agricultural customers.

The city of Turlock (Turlock) is located in southern Stanislaus County between Merced and Modesto (see Figure 1). Turlock's Regional Water Quality Control Facility currently discharges treated, recycled water to the San Joaquin River by way of the Harding Drain pursuant to an existing National Pollutant Discharge Elimination System (NPDES) permit (permit number CA0078948). This water meets California standards for unrestricted use, and is available for a variety of purposes, including agricultural irrigation, as acquired under Section 1485 of the California State Water Code. Turlock has agreed to transfer up to 13,400 acre-feet (AF) per year of this non-CVP water to Del Puerto on a recurring basis. The general location of the parties to the proposed transfer is shown in Figure 1.

Since the non-Project water would need to be conveyed in the federal Delta-Mendota Canal (DMC) and possibly stored in federal facilities, Turlock and Del Puerto have requested that Reclamation issue Warren Act Contract(s) for conveyance and storage of the non-Project water. The non-Project water would supplement a deficient CVP water supply and would be used for irrigation on existing lands in Del Puerto that currently receives CVP water.

Turlock prepared a Draft Initial Study-Negative Declaration to evaluate this action's impacts on the environment under the California Environmental Quality Act (Turlock 2013). Portions of this EA are adapted from that document.

1.2 Need for the Proposed Action

In recent years, water supplies to CVP contractors have been greatly reduced as a result of hydrologic conditions and regulatory restrictions. Like many contractors, Del Puerto seeks to expand and supplement its portfolio of water sources to provide stability to its customers. The purpose of the Proposed Action is to make up shortfalls in Del Puerto's water supply with surplus water that the Turlock has available.

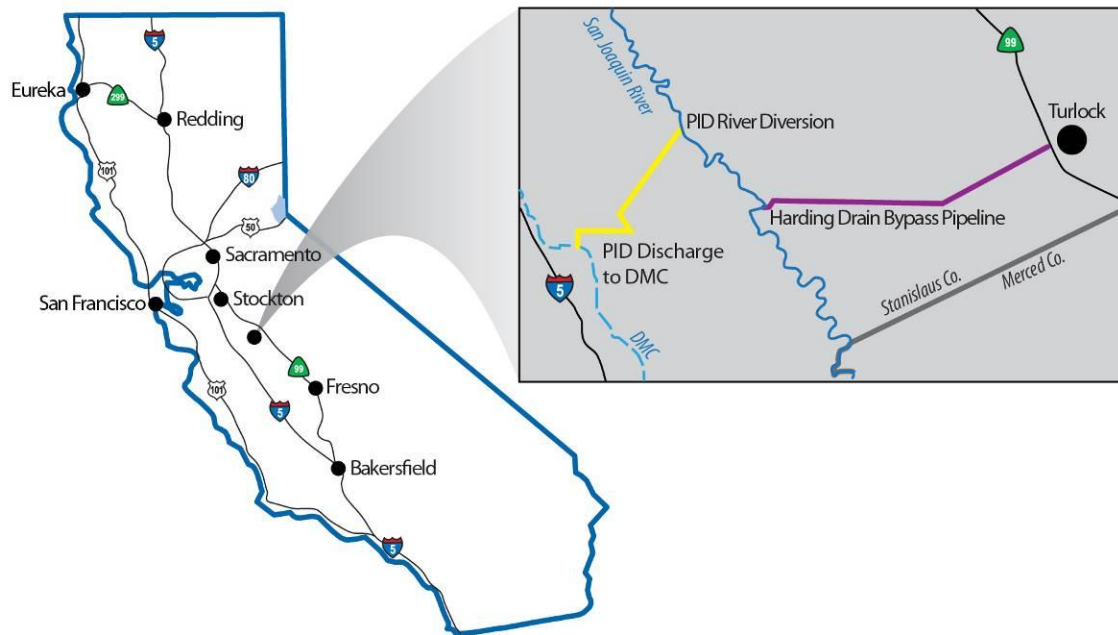


Figure 1 Proposed Action Area

Section 2 Alternatives Including the Proposed Action

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

2.1 No Action Alternative

If the No Action alternative was undertaken, Turlock's recycled water would not be delivered to Del Puerto. It would be delivered to another water user or allowed to flow to the Delta pursuant to Turlock's existing NPDES permit. Del Puerto would need to find other sources of water to meet the needs of their customers.

2.2 Proposed Action

Reclamation proposes to execute a series of Warren Act Contracts for conveyance and storage of up to 13,400 AF per year of recycled, treated water from Turlock to Del Puerto. The contracts would be no longer than five years in length individually and no longer than twenty-five years in total. The path by which the water would be conveyed is shown in Figures 2 and 3.

Water would enter the San Joaquin River at Turlock's existing discharge point, and would travel down the river to Patterson Irrigation District (Patterson). Patterson would pump the water at their intakes, which are protected by a National Marine Fisheries Service (NMFS) permitted fish screen, and convey it through their existing water delivery facilities to the DMC. The water would either be diverted directly by Del Puerto or stored in San Luis Reservoir for later delivery to Del Puerto via exchange with Reclamation. Conveyance losses of 5 percent would be assessed in Federal facilities.

The Proposed Action would utilize existing facilities and no new infrastructure, modifications of facilities, or ground disturbing activities would be needed for movement of this water.

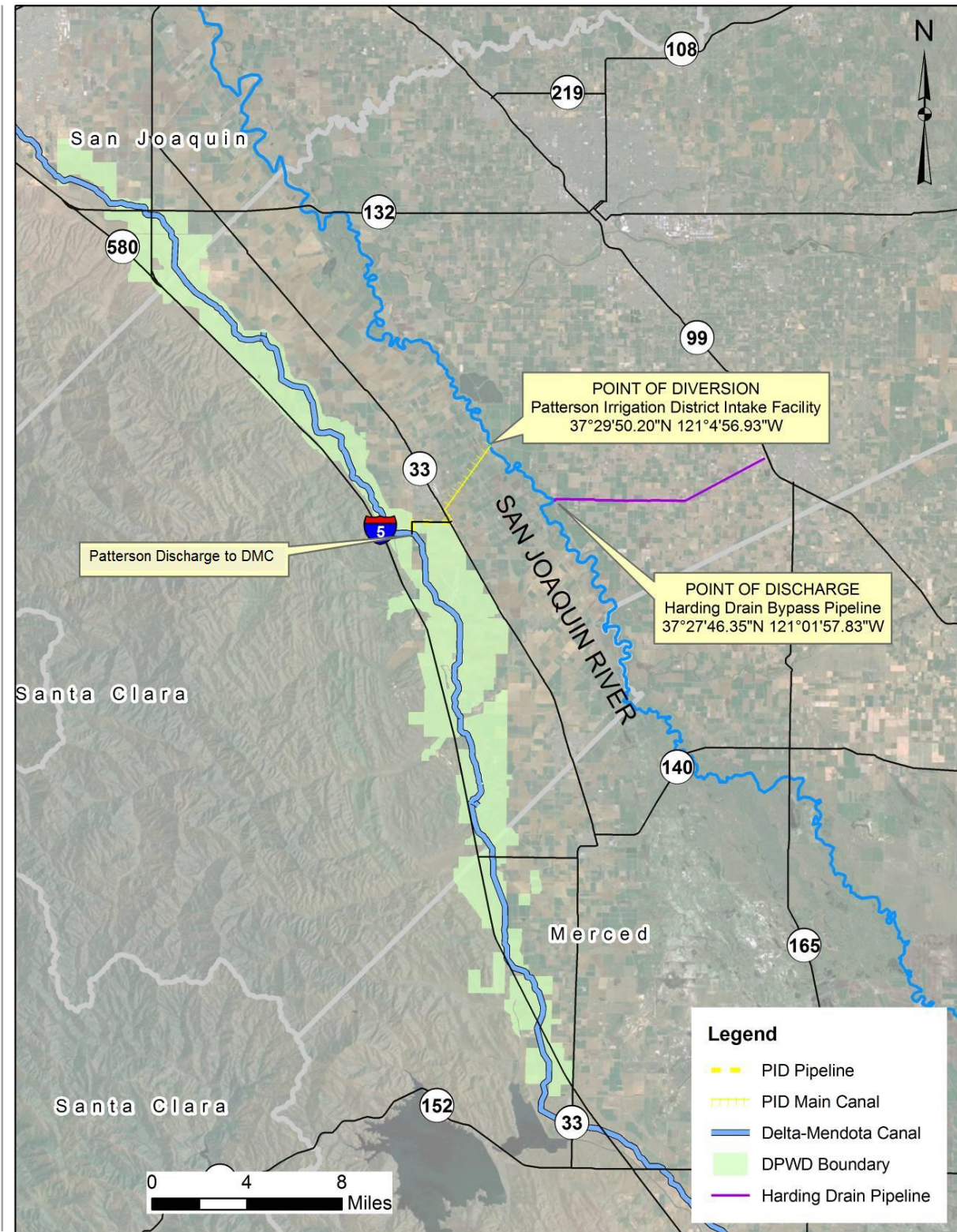


Figure 2 Proposed water diversion
Source: Turlock 2013

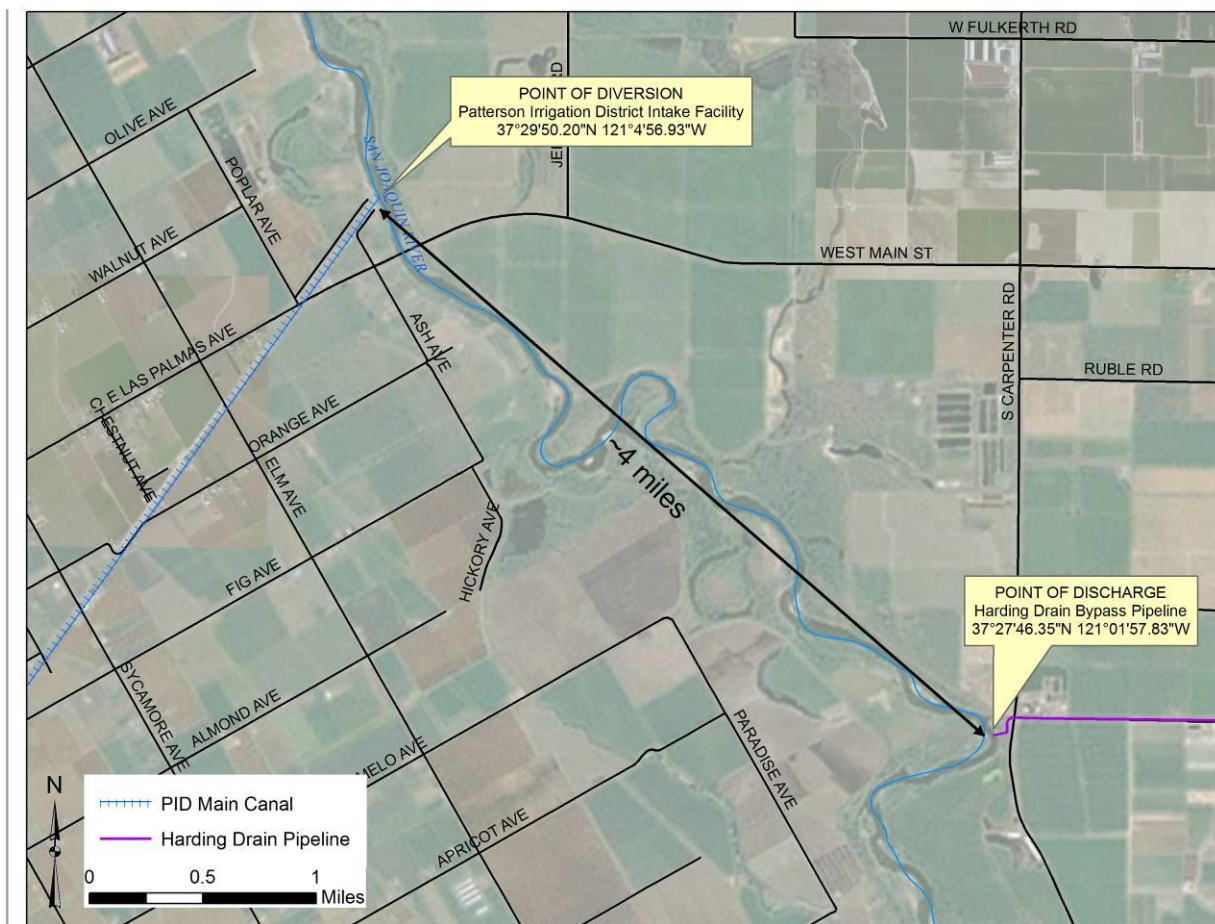


Figure 3 Diversion path to be taken by water to the Harding Drain Bypass Pipeline.

2.2.2 Environmental Commitments

Reclamation, Turlock, and Del Puerto must implement the following environmental protection measures to avoid and/or reduce environmental consequences associated with the Proposed Action (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports would be submitted to Reclamation.

Table 1 Environmental protection measures and commitments

Resource	Protection Measure
Various	Reclamation shall evaluate the environmental impacts of the Warren Act Contract and update NEPA documentation as necessary prior to each renewal. This shall include a determination as to whether additional Endangered Species Act analysis is necessary.
Various	No new construction or modification of existing facilities would take place as part of the Proposed Action.
Water Resources	Transfers and/or exchanges must not alter the quality of water, or the hydrological regime of natural waterways or natural watercourses such as rivers, streams, creeks, lakes, ponds, pools, or wetlands, etc., in a way that may have a detrimental effect on fish or wildlife or their habitat.
Water Quality	Prior to introduction, all wells shall be tested to demonstrate compliance with then-current water quality standards for conveyance of non-Project water in the DMC.

Resource	Protection Measure
Biological Resources	The Proposed Action does not include, nor does this EA evaluate, the conversion of any land fallowed and untilled for three or more years. The Proposed Action must not change the land use patterns of cultivated or fallowed fields that may have value to listed species or birds protected by the Migratory Bird Treaty Act.
Biological Resources	Patterson would continue to operate their pump station and fish screen facility at approved diversion rates that meet or exceed National Marine Fisheries Service fish screen criteria for the protection of salmonids.

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 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 2.

Table 2 Resources eliminated from further analysis

Resource	Reason Eliminated
Air Quality	The Proposed Action would not require construction or modification of facilities to move the transferred water to Del Puerto. Transferred water would move via gravity which would not produce emissions that impact air quality. No impacts to air quality would occur and a determination of general conformity under the Clean Air Act is not required.
Cultural Resources	The Proposed Action would facilitate the flow of water through existing facilities to existing users. As no construction or modification of facilities would be needed in order to complete the Proposed Action, Reclamation has determined that these activities have no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1). See Appendix B for Reclamation's determination.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations as there would be no changes to existing conditions.
Global Climate	The Proposed Action would not result in emissions of greenhouse gases as water would move in existing facilities via gravity. Global climate change is expected to have some effect on the snow pack of the Sierra Nevada and the runoff regime. Current data are not yet clear on the hydrologic changes and how they will affect the San Joaquin Valley. CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility.
Indian Sacred Sites	The Proposed Action would not limit access to or ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area. See Appendix C for Reclamation's determination.
Land Use	The Proposed Action would not change historic land and water management practices. Transferred water would move through existing facilities for delivery to lands within Del Puerto for use on existing crops. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses.
Socioeconomics	Although fees associated with the proposed Warren Act contract(s) would result in cost increases of roughly 1% or less for all socioeconomic groups in the City's service area, the Proposed Action would have an overall beneficial impact to all socioeconomic groups as it would preserve the City's urban water supply.

3.2 Water Resources

3.2.1 Affected Environment

City of Turlock

Turlock's Regional Water Quality Control Facility has a design capacity of 20 million gallons per day (MGD); currently the plant treats an annual average flow of approximately 10 MGD. All recycled water produced by Turlock meets the State of California Title 22 Code of Regulations standards for disinfected tertiary recycled water. As of 2013, the majority of recycled water produced at Turlock is discharged year-round to the San Joaquin River via the Harding Drain (a shared facility with Turlock Irrigation District); although up to 2.0 MGD is delivered to the Turlock Irrigation District for use as cooling water in an existing cogeneration facility and a small amount is used for landscape irrigation at a City park. Turlock has constructed a pipeline (Harding Drain Bypass Pipeline) that conveys recycled water directly to the San Joaquin River for permitted discharge (Central Valley Regional Water Quality Control Board 2010). The Harding Drain Bypass Pipeline is designed to convey recycled water directly from Turlock's system to the San Joaquin River and also to enable recycled water deliveries to customers along the pipeline alignment; it was completed October 2014.

Patterson Irrigation District River Diversion

Patterson has a point of diversion of pre-1914 appropriative rights on the San Joaquin River at river mile 98.5. The City of Patterson is located about 3.5 miles of the diversion point. Patterson completed construction of a new 195 cubic feet per second (cfs) NMFS-approved fish screen and diversion pump station at its San Joaquin River diversion facility in 2011. This pump station conveys water into Patterson's main canal lift system.

Patterson's main canal has five lift stations and a peak capacity of 200 cfs. It begins at the San Joaquin River, just north of the Las Palmas Bridge, and heads southwest towards the City of Patterson for approximately 3.3 miles before heading south along State Route 33. The main canal supplies thirteen lateral canals which distribute water north and south from the main canal. At the end of the main canal, Patterson maintains intertie facilities capable of conveying approximately 40 cfs to the DMC. Patterson's discharge facility is located at DMC milepost 42.53L, and Patterson is in the process of expanding its facilities to increase its capacity to convey up to 250 cfs into the DMC.

Delta-Mendota Canal

The DMC, the second largest of the CVP waterways, was completed in 1951. It includes a combination of both concrete-lined and earth-lined sections and is about 117 miles in length. The canal transports water from the Jones Pumping Plant to the Mendota Pool, which is controlled by a concrete storage dam that was constructed in 1917. The Mendota Pool is the terminus for the DMC and is located at the confluence of the San Joaquin River and the North Fork of the Kings River, approximately 30 miles west of the city of Fresno. The DMC is divided into the upper and lower portions. The dividing point is Check 13 near Santa Nella, California. Check 13 is the intake to the O'Neill Forebay and San Luis Reservoir. Capacity in the DMC is restricted by the physical limitations of the canal and the pumping limits of the Jones Pumping Plant.

Del Puerto Water District

Del Puerto is located along the west side of the San Joaquin Valley and extends from Vernalis to Santa Nella. The District includes approximately 45,000 acres of productive farmland with an estimated production value of over \$139 million gross farm dollars annually in Stanislaus, San Joaquin, and Merced Counties (Turlock 2013).

Del Puerto receives its CVP supply directly through turnouts on the DMC. The district does not have any distribution facilities and does not own any pumps, pipelines, or canals to transport the CVP water. Instead, all turnouts, pumps, pipelines, and canals in the district are maintained and operated by private owners while Del Puerto owns and operates the water meters. The district does not own or operate any groundwater wells. Individual landowners pump groundwater from their wells when Del Puerto cannot provide sufficient surface water supplies.

3.2.2 Environmental Consequences

No Action

Under the No Action alternative, Turlock's discharged water would not be conveyed in the DMC to Del Puerto. The water could be delivered by Turlock to another water user by any of a variety of arrangements, or it could be allowed to flow out to the Delta pursuant to Turlock's existing NPDES discharge permit. Del Puerto would need to pursue other sources of water to meet the needs of their customers. This could involve a combination of surface and ground water sources.

Proposed Action

Under the Proposed Action, water would enter the San Joaquin River at Turlock's existing discharge point and travel down the river to Patterson. Patterson would pump the water at their NMFS-permitted intakes and convey it through their existing water delivery facilities for introduction into the DMC. The non-Project water would either be diverted directly by Del Puerto through their existing turnouts or stored in San Luis Reservoir for later delivery to Del Puerto via exchange with Reclamation.

The Proposed Action would utilize existing facilities and no new infrastructure, modifications of facilities, or ground disturbing activities would be needed for movement of this water. No native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions (Table 1).

Cumulative Impacts

Cumulative impacts result from incremental impacts of the 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.

Reclamation has reviewed existing or foreseeable projects in the same geographic area that could affect or could be affected by the Proposed Action. Reclamation and CVP contractors have been working on various drought-related projects, including this one, in order to manage limited water supplies due to current hydrologic conditions and regulatory requirements. This and similar

projects would have a cumulative beneficial effect on water supply during these critically dry years.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drive requests for water service actions. Water districts provide water to their customers based on available water supplies and timing, 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 over the course of the Proposed Action, districts will request various water service actions, such as transfers, exchanges, and Warren Act contracts (conveyance of non-Project water in CVP facilities). Each water service transaction involving Reclamation undergoes environmental review prior to approval.

The Proposed Action would make use of existing approved capacity and would not increase diversions at the Patterson intake above the previously NMFS-approved amount. The diversion may represent a short-term net loss of water to the San Joaquin River, since the water to be conveyed to Del Puerto would have otherwise flowed to the Delta, or sold to another water user. A portion of the water directed to Del Puerto would infiltrate to local groundwater, a portion would evaporate, and a portion would drain following existing surface drainage routes. Due to the relatively small volume of water being considered, this change in hydrologic patterns within the basin is considered minor in the context of overall trends.

3.3 Biological Resources

3.3.1 Affected Environment

The Project area includes the San Joaquin River from the Harding Drain Bypass Pipeline downstream to the Patterson's intake canal (~ 5 river miles), and the DMC from Patterson's discharge to existing Del Puerto connections to the canal. With a current discharge of 10,000 AF per year into the San Joaquin River, removing this volume of water would have a small effect (< 2.5 percent) on flows at the release site, per Turlock's Initial Study-Negative Declaration and EA (Turlock 2013). Under the Proposed Action, Turlock would increase the total amount discharged and diverted to Del Puerto to 13,400 AF per year. Patterson's intake canal is screened to prevent entrapment for at-risk fish species, and meets and/or exceeds NMFS design criteria for a maximum capacity of 195 cfs (NMFS 2007). Under the Proposed Action, Patterson would continue to operate the intake canal at existing approved capacity and would not increase diversions above the previously approved amount.

In Del Puerto, biological resources are similar to those found in other agricultural areas of the San Joaquin Valley (CDC 2011). The project area is dominated by agricultural lands that include field crops, orchards, and pasture (Del Puerto 2011).

Special-Status Species

The following species list (Table 3) was obtained on January 15, 2014 (Document # 140115021030), by accessing the U.S. Fish and Wildlife Service (USFWS) Database: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm. The list is for the following 7 ½ minute United States Geological Survey (USGS) quadrangles, which overlapped

the districts in Patterson, Del Puerto, and portions of the San Joaquin River, and DMC: Howard Ranch, San Luis Dam, Crows Landing, Patterson, Orestimba Peak, Newman, Ceres, Vernalis, Tracy, and Solyo. Reclamation also queried the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDDB) for records of special-status species within 10 miles of the Action Area (CNDDDB 2014). The information collected above, in addition to information from previous environmental documentation prepared by Reclamation for the San Joaquin River, including the San Joaquin River Restoration Program (SJRRP 2011), was combined to determine the likelihood of protected species occurrence within the Action Area.

Table 3 Special Status Species that could potentially occur within affected area

Species	Status ¹	Effects ²	Summary basis for Endangered Species Act determination
Amphibians			
California red-legged frog (<i>Rana draytonii</i>)	T, X	NE	Documented as extant within San Joaquin County and Stanislaus County and suitable habitat present. Critical Habitat outside Action Area. No construction of new facilities; no conversion of lands from existing uses is proposed.
California tiger salamander, central population (<i>Ambystoma californiense</i>)	T	NE	No individuals or suitable habitat in area of effect.
Birds			
western burrowing owl (<i>Athene cunicularia hypugaea</i>)	MBTA	NT	Documented as extant within Action Area and suitable habitat is present. No construction of new facilities; no conversion of lands from existing uses is proposed.
Swainson's hawk (<i>Buteo swainsoni</i>)	MBTA	NT	Documented as extant within Action Area and suitable nesting trees and foraging habitat is present. No construction of new facilities; no conversion of lands from existing uses is proposed.
Fish			
Central Valley spring-run Chinook salmon evolutionarily significant unit (ESU) (<i>Oncorhynchus tshawytscha</i>)	T, NMFS	NE	No increase in water turbidity or any riverbed scouring would occur (Hansen Environmental, Inc. 2013). Effects to the species from Patterson's diversion were addressed by NMFS (2007).
Central Valley Steelhead distinct population segment (DPS) (<i>Oncorhynchus mykiss</i>)	T, X, NMFS	NE	No increase in water turbidity or any riverbed scouring would occur (Hansen Environmental, Inc. 2013). Effects to the species from Patterson's diversion were addressed by NMFS (2007).
Delta smelt (<i>Hypomesus transpacificus</i>)	T, X	NE	No individuals and no natural waterways within the species' range, including critical habitat, will be affected by the Action Area.
North American Green sturgeon, Southern DPS (<i>Acipenser medirostris</i>)	T, NMFS	NE	No individuals and no natural waterways within the species' range will be affected by the Action Area.
Winter-run Chinook salmon, Sacramento River ESU (<i>Oncorhynchus tshawytscha</i>)	E, NMFS	NE	No individuals and no natural waterways within the species' range will be affected by the Action Area.
Invertebrates			
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	NE	One individual recorded 6 miles northwest of Del Puerto. Riparian habitat present along San Joaquin River banks. No construction of new facilities; no conversion of lands from existing uses is proposed.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	NE	No individuals or suitable habitat in area of effect. Vernal pools absent.
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	E	NE	No individuals or suitable habitat in area of effect. Vernal pools absent.

Species	Status ¹	Effects ²	Summary basis for Endangered Species Act determination
Mammals			
Fresno kangaroo rat (<i>Dipodomys nitratoides exilis</i>)	E	NE	No individuals or suitable habitat in area of effect.
riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	E	NE	No individuals or suitable habitat in area of effect.
riparian (San Joaquin Valley) woodrat (<i>Neotoma fuscipes riparia</i>)	E	NE	No individuals or suitable habitat in area of effect.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	NE	CNDDDB records indicate this species occurs in the Proposed Action Area. No construction of new facilities; no conversion of lands from existing uses is proposed.
Plant			
large-flowered fiddleneck (<i>Amsinckia grandiflora</i>)	E	NE	No individuals documented in the Proposed Action Area. No construction of new facilities; no conversion of lands from existing uses is proposed.
Reptiles			
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	E	NE	No individuals documented in the Proposed Action Area and suitable habitat absent. No construction of new facilities; no conversion of lands from existing uses is proposed.
Giant garter snake (<i>Thamnophis gigas</i>)	T	NE	No individuals documented in the Proposed Action Area and suitable habitat absent. No construction of new facilities; no conversion of lands from existing uses is proposed.
<p>1 Status = Listing of Federally protected species E: Listed as Endangered MBTA: Those species protected under the Migratory Bird Treaty Act NMFS: National Marine Fisheries Service T: Listed as Threatened X: Critical Habitat designated for this species</p> <p>2 Effects Determination NE = No Effect NT = No Take</p>			

The San Joaquin River has a diverse fish assemblage, including the federally protected Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) evolutionarily significant unit (ESU), Central Valley steelhead distinct population segment (DPS) (*O. mykiss*), and North American green sturgeon, Southern DPS (*Acipenser medirostris*). The decline of these populations in the San Joaquin River system is influenced by factors such as inadequate flows, unscreened diversions, inadequate passage at diversion dams, agricultural return drains, poor water quality, reduced spawning gravel, and poaching (SJRRP 2011). Unscreened diversions have been particularly detrimental to migrating fish. Water diversions have historically created numerous obstacles for migrating salmon and steelhead.

Currently, the San Joaquin River near Patterson's intake canal provides transitory habitat for migrating Chinook salmon and steelhead, both as adults and juveniles, as they move upstream to tributaries, or downstream towards the Delta. The river banks are leveed, and the river can be characterized by slow-velocity run habitat with a sandy-silty bottom and no riffles (SJRRP 2011). Effects to federally-protected species, designated critical habitat, and essential fish habitat, from Patterson's operations were addressed by NMFS (2007). NMFS concurred with Reclamation's *Not Likely to Adversely Affect* determination under section 7 of the Endangered

Species Act and section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to wildlife and special status species, as no new facilities would be constructed and existing San Joaquin River flows would continue as has historically occurred. The current discharge of 10,000 AF per year from Turlock to the San Joaquin River may or may not continue. More than likely, Turlock would sell their water to another user. The conditions of special status wildlife species and habitats under the No Action Alternative would be the same as they would be under existing conditions described in the Affected Environment; therefore, no additional effects to special status species or critical habitats are associated with this alternative.

Proposed Action

The effects to biological resources by conveying up to 13,400 AF per year of recycled, treated water to Del Puerto for agricultural uses would be similar to the No Action Alternative. Most of the habitat types required by species protected under the Endangered Species Act do not occur in Del Puerto's service boundary. Any encountered biological resources are likely to be those associated with actively cultivated land.

Under the Proposed Action, the water would be conveyed in existing facilities to established agricultural lands. No native lands or lands fallowed and untilled for three or more years would be disturbed as this water would be used on existing farmed lands. Changes to native or fallowed lands would require separate environmental review. No critical habitat occurs within Del Puerto's service boundary, so no critical habitat primary constituent elements would be affected. 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).

Potential impacts to listed anadromous fish species, their critical habitat, and essential fish habitat resulting from the operation of Patterson's intake canal on the San Joaquin River were addressed in a concurrence letter issued by NMFS to Reclamation (NMFS 2007). NMFS concurred Patterson's intake canal was not likely to affect the Central Valley steelhead and their designated habitat, as long as no more than four percent of the flow of the San Joaquin River is diverted through the intake at a capacity of 195 cfs. Under the Proposed Action, no greater than two percent of the total river flow, including this action, would be diverted and Patterson's operations would not exceed existing coverage (Central Valley Regional Water Quality Control Board 2010). For the reasons listed above, Reclamation has determined that the Proposed Action would have no effect to Central Valley spring-run Chinook salmon ESU and Central Valley steelhead DPS. In addition, the Proposed Action would not affect essential fish habitat for Pacific salmon.

Cumulative Impacts

With incorporation of the environmental protection measures listed in Table 1, the Proposed Action would not contribute cumulatively to any impacts to terrestrial special-status species

because no land use change would result from the Action. The diversion of discharged water from Turlock to Del Puerto via Patterson's intake canal, when added to other past, present, and reasonably foreseeable future actions, would not result in additional cumulative impacts on the biological resources of the study area and downstream impacts than those already analyzed (NMFS 2007). This determination relies on Patterson complying with the existing approved pumping capacity (195 cfs) and that the decrease in flow to the San Joaquin River from the Proposed Action would be less than four percent per NMFS' requirements. As the Proposed Action itself is unlikely to impact special-status plant, fish or wildlife resources, it is also unlikely to contribute to cumulative impacts on those resources.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation provided the public with an opportunity to comment on the Draft FONSI and Draft EA between April 1, 2014 and May 1, 2014. No comments were received.

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

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

Reclamation has determined the Proposed Action would have no effect to threatened or endangered species or designated critical habitats under the jurisdiction of USFWS. This decision is based on no native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions and the implementation of stringent water quality standards.

Effects to species under NMFS's jurisdiction resulting from Patterson's pumping facilities were addressed in Patterson's fish screen project (NMFS 2007). This project would be operated within existing capacity analyzed. Therefore, Reclamation determined no further consultation with NMFS is required.

4.3 Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management is the primary law governing marine fisheries management in United States federal waters. The Act was first enacted in 1976 and amended in 1996.

Essential Fish Habitat (EFH) for Pacific salmon does occur within the Action Area. The Proposed Action would have no effect to EFH for Pacific salmon, therefore; Reclamation has determined that consultation is not required.

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Section 5 Preparers and Reviewers

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Section 6 References

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Appendix A

Reclamation's Water Quality Monitoring Plan

RECLAMATION

Managing Water in the West

Delta-Mendota Canal Non-Project Surface Water Pump-in Program

2016 Water Quality Monitoring Plan



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.

**Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
2016 Water Quality Monitoring Plan**

United States Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
South-Central California Area Office

DRAFT

Cover Photograph: Patterson ID facility at Delta-Mendota Canal Milepost 42.53L (MCS Eacock, 2013)

List of Abbreviations and Acronyms

Authority	San Luis and Delta-Mendota Water Authority
°C	Degrees Celsius
CDEC	California Data Exchange Center
COC	Chain of Custody
CVP	Central Valley Project
DMC	Delta-Mendota Canal
DMC Headworks	DMC Milepost 2.5, Jones Pumping Plant
DMC Check 13	DMC Milepost 70, O'Neill Forebay
DMC Check 20	DMC Milepost 111, near Firebaugh
DMC Check 21	DMC Milepost 116, terminus at Mendota Pool
DWR	California Department of Water Resources
DFG	California Department of Fish and Game
DWR	California Department of Water Resources
EC	Electrical Conductivity, $\mu\text{S}/\text{cm}$
Exchange Contractors	San Joaquin River Exchange Contractors Water Authority
°F	Degrees Fahrenheit
mg/L	Milligrams per Liter, equivalent to parts per million
MP-157	Environmental Monitoring Branch, Reclamation
QA	Quality Assurance
QC	Quality Control
QCO	Quality Control Officer
Reclamation	U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region
Regional Board	California EPA, Central Valley Regional Water Quality Board
SCCAO	South-Central California Area Office, Reclamation
TDS	Total Dissolved Solids, mg/L
USGS	U.S. Geological Survey
$\mu\text{g}/\text{L}$	Micrograms per Liter, equivalent to parts per billion
$\mu\text{S}/\text{cm}$	MicroSiemens per cm, salinity in water

Introduction

The overall supply of Central Valley Project (CVP) water for the western San Joaquin Valley has been reduced by drought and restrictions on pumping from the Sacramento-San Joaquin River Delta. Under the Warren Act of 1911, the Bureau of Reclamation may execute temporary contracts to convey non-project water in excess capacity in federal irrigation canals to supplement the diminished supply of CVP water.

In Contract Water Year 2016¹, Reclamation proposes to execute temporary contracts with water districts to convey non-project surface water in the Delta-Mendota Canal (DMC) subject to the monitoring and reporting requirements outlined in this document. The following districts could participate in this program:

Table 1a. Non-Project Surface Water Pump-in Locations

DMC Milepost	District	Flow Rate (cfs)
3.32R	Byron-Bethany ID	40
20.42L	Banta-Carbona ID	60
31.31L	West Stanislaus ID	25
37.24L	Del Puerto WD ²	18-34
42.54L	Patterson ID ³	40
43.22L	Del Puerto WD ⁴	16

This document describes the plan for measuring the changes in the quality of water in the DMC resulting from the conveyance of non-project surface water. Various agencies will use these data to assess any impacts on the quality of water delivered to farms, wetlands, and the State Water Project through the O'Neill Forebay.

This document has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), in cooperation with the San Luis & Delta-Mendota Water Authority (Authority). This monitoring plan will be conducted by staff of Reclamation and the Authority, and the data will complement independent monitoring by other Federal and State agencies.

This monitoring program will consist of initial analysis of each source of non-project surface water, comparison with water quality standards, routine analysis during operations, and routine in-stream analysis. Daily flow and salinity will be monitored in a mass balance to assess any degradation caused by the conveyance of this water.

¹ 2016 Contract Water Year = 01 March 2016 – 28 February 2017

² Proposed North Valley Regional Recycled Water Project (NVRWP) discharge point

³ May include water from the proposed NVRWP during construction

⁴ Alternate NVRWP discharge point

Several sampling techniques will be used to collect samples of water, including real-time, grab, and composite. The techniques used at each location are summarized in **Table 2** of this plan.

Continuous measurement of electrical conductivity (EC) will be recorded at three stations in the canal and four sites in the San Joaquin River using sondes connected to digital data loggers operated by Reclamation and the California Department of Water resources (DWR). The data will be averaged every 15 minutes, sent via satellite to the California Data Exchange Center (CDEC) where it will be posted online as preliminary data:

<http://cdec.water.ca.gov/queryDaily.html>

Central Valley Operations Office will post the daily average salinity measurements on its website:

<http://www.usbr.gov/mp/cvo/wqrpt.html>

The Authority will record the rates of flow from each source of non-project surface water and will report monthly totals to Reclamation. The Authority will also provide mean daily flow in the canal at the headworks and passing Checks 13 and 21.

This document deals with the conveyance of non-project surface water in the DMC. There will be introductions of groundwater in the canal as well that will be monitored separately.

Reclamation will compile all data to assess changes in water quality caused by the conveyance of non-project surface water and groundwater in Contract Water Year 2016. The real-time data will be used in a mass balance to predict water quality conditions along the DMC, and attribute changes caused by each source of non-project water. The calculated results will be reported to the Authority and DWR.

Background

The Delta Division of the federal CVP consists of a million acres of farmland and wetlands in the San Joaquin Valley, California. The Division is the sole source of clean water for the Cities of Tracy and Dos Palos, and for state and federal wildlife refuges and many private wetlands in Fresno, Merced, San Joaquin, and Stanislaus Counties.

The source of water for the Division is the Sierra Nevada in northern California, passing through the delta of the Sacramento and San Joaquin Rivers. The salinity of water in the Delta is highly variable due to the influence of tides and outflow of river water, but it is suitable in quality for irrigation and wetlands. Uncontrolled inflows of tailwater and subsurface water add contaminants to the canal.

California is regularly affected by droughts that reduce the supply of water. Environmental regulations also restrict the operation of the Jones Pumping Plant to divert water from the Delta.

The DMC carries CVP water to Delta Division farms, communities, and wetlands between Tracy and Mendota. The 116 mile canal is operated and maintained by the Authority under contract with Reclamation. The DMC is connected to the State Water Project at the O'Neill Forebay.

The districts and refuges in the Delta Division must use non-project water to supplement their contractual supply from the CVP. The term "Non-Project Water" applies to water that has not been appropriated by the United States for the purposes of the CVP.

The Warren Act of 1911⁵ authorizes Reclamation to execute temporary contracts to impound, store, and carry non-project water in federal irrigation canals when excess capacity is available. These contracts are negotiated by Reclamation with Delta Division water districts to allow the introduction of non-project water into the Delta-Mendota Canal to supplement the supply of CVP water to help farmers deliver enough water to irrigate and sustain valuable permanent crops like grapes, citrus, and deciduous fruit, and to sustain the local multi-billion dollar farming economy.

The two sources of non-project water are 1) groundwater from wells located beside the canal, and 2) surface water pumped through pipelines from the San Joaquin River and Los Banos Creek.

The quality of non-project water must be measured to confirm that there will be no harm to downstream water users when this water is pumped into the canal. Reclamation has developed a set of standards for the acceptance of non-project water in the canal based on the requirements of downstream water users.

In Contract Water Year 2016, environmental regulations and climate change continue to reduce the supply of CVP water for the Delta Division. Water managers now must depend on non-project water to supplement a diminished supply of CVP water.

This monitoring plan will measure any changes in the quality of CVP water in the Delta-Mendota Canal caused by the introduction of non-project surface water. The data will be used by the Authority and Reclamation to regulate the 2016 pump-in program and evaluate future programs.

⁵ Act of February 21, 1911, ch. 141, 36 Stat. 925

Monitoring Mission and Goals

The mission of this monitoring plan is to provide reliable data for managers to implement the terms of the 2016 Warren Act Contracts and exchange agreements, and to ensure that the CVP water remains suitable for all downstream water users.

Program Goals

The general goals of monitoring are:

- Evaluate the quality of each source of non-project surface water,
- Compare this water with established water quality standards (Table 3),
- Confirm that this water continues to meet current water quality standards (Table 4), and
- Confirm that the blend of CVP water and non-project surface water will be suitable for domestic, agricultural, and wetlands uses.

Study Area

The Study Area for this program encompasses 1) the Delta-Mendota Canal from Tracy to Mendota, 2) the O'Neill Forebay and the connection to the State Water Project, and 3) the San Joaquin River between Patterson and Mossdale. There is a proposed connection to the North Valley Regional Recycling Program to convey tertiary treated water from the Cities of Modesto and Turlock, but this connection may not occur in 2016. The four active (and two proposed) surface water pump-in sites are listed in **Table 1a**. The quantity of non-project surface water that has been pumped through these facilities is listed in **Table 1b**.

Water Quality Standards

Each source of non-project surface water will be tested annually for the constituents listed in **Table 3**. The results will be compared with standards developed by Reclamation based on the requirements of downstream water users. Most standards are based on California Domestic Water Quality Standards⁶. We are also measuring boron and sodium that are important for irrigation, and two pesticides (chlorpyrifos and diazinon) that are regulated separately by the Regional Board. We also restrict the concentration of

⁶ Title 22 California Code of Regulations. Division 4 Environmental Health. Chapter 15 Domestic Water Quality and Monitoring Regulations. Sections 64401 et seq, as amended.

selenium in any pump-in water shall not exceed 2 µg/L, the limit for the Grasslands wetlands water supply channels specified in the 1998 Basin Plan⁷.

⁷ California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

Water Quality Monitoring Plan

Initial Analysis

All districts participating in the 2016 DMC Surface Water Pump-in Program must provide the following information about each source of non-project surface water to Reclamation prior to pumping that water into the DMC:

- The current license to erect and maintain the pump-in structure within the DMC right-Of-way
- The current Warren Act Contract that allows the non-project surface water to be conveyed in the DMC during 2016
- The schedule and pump-in rate of each source;
- And complete report of water quality analysis (**Table 3**).

The Districts must provide access to each pump-in facility for Reclamation and Authority staff. Each pump-in facility must have an easily accessible device that lists flow (cubic-feet per second) and cumulative acre-feet, a spigot for collecting a water sample, and a corporation stop to be used by Authority staff to calibrate the flow meter.

All water samples must be collected and preserved according to established protocols in correct containers. Reclamation may assist with the collection of these samples.

Analyses should be conducted by laboratories that have been approved by Reclamation, listed in **Table 5a** and **Table 5b**. Each sample of non-project surface water must be sampled and analyzed at the expense of the Warren Act Contract district.

In-canal Monitoring

The quality of water in the DMC will be measured at the locations listed in **Table 2**. Reclamation will be responsible for the costs of sampling and analysis of water sampled from the DMC under this monitoring program.

Reclamation will compile electrical conductivity data from the real-time stations in the DMC and San Joaquin River near each surface water diversion. Reclamation will continue to measure selenium and salinity at three places along the DMC.

If the proposed real-time monitoring is not sufficient, Reclamation may require detailed instream monitoring to identify the individual and cumulative changes in water quality caused by the addition of non-project surface water.

Compliance Monitoring

Each source of non-project surface water must be tested each month for a short list of constituents, listed on **Table 4**, to confirm that the water continues to meet current standards. The frequency and parameters will be modified through the 2016 contract year.

The salinity of water in the San Joaquin River and DMC will be measured with sensors that report real-time data to CDEC, listed in **Table 2**. Reclamation will monitor daily changes in salinity in the DMC while the non-project surface water is being pumped into the canal.

The daily flow data will be collected by Reclamation and used in a mass balance to monitor water quality conditions along the DMC, and attribute changes caused by each source of non-project water. The calculated results will be reported to the Authority and DWR.

The monthly volume of water pumped into the DMC from each pump-in structure will be measured by the Authority and reported to Reclamation at the beginning of each month.

Selenium Monitoring

The concentration of selenium must remain below 2 ug/L to meet the Basin Plan selenium objectives for the Grasslands wetlands water supply channels. Detailed selenium analyses will be conducted to confirm that CVP water meets this objective.

Based on available funds, Reclamation will continue to measure selenium in the canal with autosamplers at the DMC headworks, Check 13, and Check 21. Reclamation may collect random samples of water from the active surface water and groundwater pump-ins to the DMC; the cost of these selenium tests will be borne by Reclamation.

Data Compilation and Review

All flow monitoring data collected by the Authority will be presented to Reclamation via e-mail. Authority staff provide daily reports of canal flows and monthly totals of pumped-in water.

Reclamation will use a mass-balance to assess the effects of the surface water pump-ins on salinity in the DMC.

Water Quality Monitoring Parameters

The following sections describe the parameters for real-time and laboratory measurement of water quality, as well as methods for quality control, data management, and data reporting.

Real-Time Water Quality Monitoring Parameters

The Central Valley Operations Office (CVO) operates four sensors along the DMC that measure salinity and temperature of water. These continuous measurements are posted on the Internet in real-time. The Department of Water Resources operates similar sensors along the San Joaquin River. Preliminary real-time data from these sensors are reported by the California Data Exchange Center. Reclamation will compile these data for the salinity mass balance (Appendix A).

Salinity

Salinity is a measure of dissolved solids in water. It is the sum weight of many different elements within a given volume of water, reported in milligrams per liter (mg/L) or parts per million (ppm). Salinity is an ecological factor of considerable importance, influencing the types of organisms that live in a body of water. Also, salinity influences the kinds of plants and fish that will grow in a water body. Salinity can be estimated by measuring the electrical conductivity (EC) of the water.

Sampling For Laboratory Analyses of Water Quality

The following sections describe constituents for laboratory analyses of water quality, as well as methods for water quality sampling and chain of custody documentation.

Constituents

Tables 3 and 4 list constituents to be measured at the discharge facility for each source of non-project surface water that will pump into the DMC. Most of these constituents cannot be measured with field sensors. **Table 5a** is a list of laboratories whose sampling and analytical practices have been approved by Reclamation.

Sampling methods

Grab samples will be collected in a bucket or bottle from the point of discharge into the canal. Samples of canal water should be collected mid-stream from a bridge or check structure. Grab samples should be poured directly into sample bottles appropriate to the analyses. This technique is for samples to be collected weekly or less frequently. The analytical laboratory will specify the sample volume, type of bottle, need for

preservative, and special handling requirements. Reclamation may train field staff on proper sample collection and handling.

Time composite samples will be collected from the DMC by Reclamation using autosamplers. Daily composite samples will consist of up to eight subsamples taken per day and mixed into one bottle.

Data Management

Chain of Custody Documentation

Chain of custody (COC) forms will be used to document custody of the samples. All individuals transferring and receiving samples will sign, date, and record the time on the COC that the samples are transferred.

Laboratory COC procedures are described in each laboratory's Quality Assurance Program Manual. Laboratories must receive the COC documentation submitted with each batch of samples and sign, date, and record the time the samples are transferred. Laboratories will also note any sample discrepancies (e.g., labeling, breakage). After generating the laboratory data report for the client, samples will be stored for a minimum of 30 days in a secured area prior to disposal.

Field Logbooks

At the time of sample collection, field logbook entries are made. The field logbook documents: site name, date of sample collection, start and end time of sample collection, QA samples collected, sample identification (ID), method of sampling, parameters and matrices collected, and any unusual conditions that might affect the samples. After entering the required information, the field sampler must sign the field logbook entry. The field logbook is bound with numbered pages.

Instrument Calibration Sheet

The instrument calibration sheet documents the information from an initial calibration, performed prior to instrument use, and information from a verification check, performed after all sampling for that day is completed. Information documented on the instrument calibration sheet should include project name, date, time(s), field sampler's name, instrument number, standard value, initial value, adjusted value and post calibration value.

Quality Assurance and Quality Control

Quality control (QC) is the overall system of technical activities that measure the attributes and performance of a process, item, or service against defined standards to verify that stated requirements are met.

Quality assurance (QA) is an integrated system of management activities involving, planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

QA criteria will be documented in the program Quality Assurance Project Plan (QAPP) and will be used to validate the data for this project. The data will be accepted, rejected, or qualified based on how sample results compare to established acceptance criteria.

External QA samples will be incorporated at the rate specified in the QAPP; external QA samples can include duplicates, spikes, reference materials or blanks. The precision, accuracy, and contamination criteria will be used by the Quality Control Officer (QCO) to validate the data for this project. The criteria will be applied to the blind external duplicate/split, blank, reference, or spiked samples submitted with the production samples to the analytical laboratories by the participating agencies to provide an independent assessment of precision, accuracy, and contamination.

Laboratories analyze their own QC samples with the client's samples. Laboratory QC samples, including laboratory fortified blanks, matrix spikes, duplicates, and method blanks, assess precision, accuracy, and contamination. Laboratory QC criteria are stated in the analytical methods or determined by each laboratory. Since internal control ranges are often updated in laboratories based on instrumentation, personnel, or other influences, it is the responsibility of the QCO to verify that these limits are well documented and appropriately updated during system audits. The preferred method of reporting the QC results is for the laboratory to provide a QC summary report with acceptance criteria for each QC parameter of interest.

For water samples, the QCO will use a statistical program to determine if current concentrations for parameters at given sites are consistent with the historical data at these sites. A result is determined to be a historical outlier if it is greater than 3 standard deviations from the average value for the site. The presence of an outlier could indicate an error in the analytical process or a significant change in the environment.

Samples must be prepared, extracted, and analyzed within the recommended holding time for the parameter. Data may be qualified if the sample was analyzed after the holding time expires.

Completeness refers to the percentage of project data that must be successfully collected, validated, and reported to proceed with its intended use in making decisions.

The sensitivities of the analytical methods selected should ideally provide reporting limits (RL) at levels of at least three times below the parameter's lowest water quality threshold. However, the technology may not always be in place to achieve the needed level of sensitivity and even if present, may not be fiscally possible. Note that due to sample matrix effects and other analytical issues, the RL values actually obtained may be higher than the anticipated RLs.

Hand held instruments (meters) will be used to measure water characteristics (i.e., EC). The detection limits (or sensitivity) for field instruments will conform to the specifications of the manufacturer.

Constraints with regard to time, money, safety, and personnel were some of the factors in choosing the most representative sites for this project. Monitoring sites have been selected by considering the physical, chemical, and biological boundaries that define the system under study.

Sites also were selected to be as representative of the system as possible. However, Reclamation will continue to evaluate the choice of the sites with respect to their representativeness.

Comparability between each agency's data is enhanced through the use of Standard Operating Procedures that detail methods of collection and analysis. Each agency has chosen the best available protocol for the sampling and analyses for which it is responsible based on the agency's own expertise. Audits performed by the QCO will reinforce the methods and practices currently in place and serve to standardize techniques used by the agencies.

Data Management

Real-Time Data – Raw data from field sensors, must be identified as preliminary, subject to change.

Provisional Data - Data that have been reviewed by the collecting agency but may be changed pending re-analyses or statistical review.

Laboratory Data – Data produced by the laboratory following laboratory QA/QC protocols.

Water Quality Requirements

Each week, Reclamation staff will use the real-time salinity measurements (**Table 2**) to monitor and determine the changes in salinity in the DMC, and determine if the pump-ins have caused these changes.

Reclamation will review the monthly grab samples (Table 4) to confirm that each source of non-project surface water continues to meet current water quality standards.

Reclamation staff will compile other water quality data collected for this program and by others to evaluate changes in the canal.

Reclamation and the Authority will allow non-project surface water and groundwater to be pumped into the DMC if such water does not cause the concentration of salinity in the canal to exceed thresholds listed in **Table 6**.

Reclamation reserves the right to modify this monitoring program at any time to change.

Revised: 22 April 2016

Table 1a. Non-Project Surface Water Pump-in Locations

Table 1b. Water Year Totals of Surface Water Pumped into the DMC (Acre-feet)

Table 2. Water Quality Monitoring Plan

Table 3. Water Quality Standards, Annual Full Analysis

Table 4. Water Quality Standards, Monthly Testing

"Table 5a. Approved Laboratory List for the Mid-Pacific Region

Quality Assurance and Data Management Branch (MP-156)

Environmental Monitoring and Hazardous Materials Branch (MP-157)"

Table 5b. Approved Laboratory Matrix for the Mid-Pacific Region

Table 6. Parameters for Accepting Non-Project Surface Water in the Upper DMC

Appendix A. Salinity Mass Balance

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
2016 Water Quality Monitoring Plan

Table 1a. Non-Project Surface Water Pump-in Locations

DMC Milepost	District	Flow Rate (cfs)	Notes
3.32R	Byron-Bethany ID	40	
20.42L	Banta-Carbona ID	60	
31.31L	West Stanislaus ID	25	
37.24L	Del Puerto WD	18 - 34	Proposed NVRRWP Alternative 1 discharge point
42.53L	Patterson ID	40	
43.22L	Del Puerto WD	16	Proposed NVRRWP Alternative 2 discharge point

Delta-Mendota Canal
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Table 1b. Water Year Totals of Surface Water Pumped into the DMC (Acre-feet)

Milepost	District	WY 2009	WY 2010	WY 2011	WY 2012	WY 2013	WY 2014
	Water Year Type	Below Normal	Above Normal	Wet	Dry	Critical	Critical
3.32R1	Byron-Bethany ID	782	1,440	0	2,588	2,792	216
3.32R2	Byron-Bethany ID	782	1,383	0	2,241	2,437	198
3.32R3	Byron-Bethany ID						0
20.42L	Banta-Carbona ID	14,011	10,580	6,215	11,468	26,330	18,332
31.31L	West Stanislaus ID	0	0	0	0	2,505	4,180
31.31L	West Stanislaus ID	0	0	0	0	3,346	4,693
42.54L	Patterson ID	0	142	731	10,018	34,865	8,863
		15,575	13,545	6,946	26,315	72,275	36,482

Data from San Luis & Delta-Mendota Water Authority
WY = Water Year = October - September

Delta-Mendota Canal
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Table 2. Water Quality Monitoring Plan

DMC Milepost	River Mile	Location	Operating Agency	Title 22	Short List	EC (CDEC ID)	Selenium	Site ID
2.53		Harvey Banks Pumping Plant	DWR		Monthly	Real-time (HRD)		KA000331
3.32L		Jones Pumping Plant	Reclamation			Real-time (DMC)		
3.46		Pump-in from State Water Project	Byron-Bethany ID	Annual	Monthly			
20.42L	56.1	Top of siphon downstream of Jones Pumping Plant	Reclamation				Daily composite	DMC_SL_1
31.31L	77.3	Pump-in from San Joaquin River	Banta-Carbona ID	Annual	Monthly	Real-time (MSD)		
37.24L		Pump-in from San Joaquin River	West Stanislaus ID	Annual	Monthly	Real-time (MRB)		
42.53L	98.5	Proposed NVRRWP discharge point (Alternative 1)	Del Puerto WD					
43.22L		Pump-in from San Joaquin River	Patterson ID	Annual	Monthly	Real-time (SJP)		
67.15		Proposed NVRRWP discharge point (Alternative 12)	Del Puerto WD					
68.03		DMC upstream of McCabe Road	Reclamation				Monthly	DMC_NP_144
70.01		DMC at McCabe Road	DWR		Monthly		Monthly	DMC006716
111.26		DMC Check 13 O'Neill Forebay	Reclamation			Real-time (ONI)	Daily composite	DMC_SL_2
116.48	204.2	DMC Check 20	Reclamation			Real-time (DM2)		
		DMC Check 21	Reclamation			Real-time (DM3)	Daily composite	DMC_SL_3

Key:

CDEC: California Data Exchange Center

DWR: California Department of Water Resources

EC: Electrical conductivity

NVRRWP: North Valley Regional Recycled Water Program (proposed); monitoring subject to Waste Discharge Requirements

Reclamation: MP-157 Environmental Monitoring Branch

Delta-Mendota Canal
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Table 3. Water Quality Standards, Annual Full Analysis

Constituent	Units	Maximum Contaminant Level		Detection Limit for Reporting		CAS Registry Number	Recommended Analytical Method
Primary							
Aluminum	mg/L	1	(1)	0.05	(2)	7429-90-5	EPA 200.7
Antimony	mg/L	0.006	(1)	0.006	(2)	7440-36-0	EPA 200.8
Arsenic	mg/L	0.010	(1)	0.002	(2)	7440-38-2	EPA 200.8
Asbestos	MFL	7	(1)	0.2 MFL>10um	(2)	1332-21-4	EPA 100.2
Barium	mg/L	1	(1)	0.1	(2)	7440-39-3	EPA 200.7
Beryllium	mg/L	0.004	(1)	0.001	(2)	7440-41-7	EPA 200.7
Cadmium	mg/L	0.005	(1)	0.001	(2)	7440-43-9	EPA 200.7
Chromium, total	mg/L	0.05	(1)	0.01	(2)	7440-47-3	EPA 200.7
Cyanide	mg/L	0.15	(1)	0.1	(2)	74-90-8	EPA 335.2-4
Fluoride	mg/L	2.0	(1)	0.1	(2)	16984-48-8	EPA 300.0
Hexavalent chromium	mg/L	0.010	(1)	0.001	(2)	18540-29-9	EPA 218.7
Mercury	mg/L	0.002	(1)	0.001	(2)	7439-97-6	EPA 245.1
Nickel	mg/L	0.1	(1)	0.01	(2)	7440-02-0	EPA 200.7
Nitrate (as NO3)	mg/L	45	(1)	2	(2)	7727-37-9	EPA 300.1
Nitrate + Nitrite (sum as nitrogen)	mg/L	10	(1)			17778-88-0	EPA 353.2
Nitrite (as nitrogen)	mg/L	1	(1)	0.4	(2)	14797-65-0	EPA 300.1
Perchlorate	mg/L	0.006	(1)	0.004	(2)	14797-73-0	EPA 314.1/332
Selenium	mg/L	0.002	(10)	0.0004	(15)	7782-49-2	EPA 200.8
Thallium	mg/L	0.002	(1)	0.001	(2)	7440-28-0	EPA 200.8
Secondary							
Boron	mg/L	2	(10)			7440-42-8	EPA 200.7
Chloride	mg/L	250 - 600	(7)			16887-00-6	EPA 300.1
Color	units	15	(6)				EPA 110.2
Copper	mg/L	1.0	(6)	0.05	(8)	7440-50-8	EPA 200.7
Foaming agents	mg/l	0.5	(6)				SM 5540C
Iron	mg/L	0.3	(6)			7439-89-6	EPA 200.7
Lead	mg/L	0.015	(9)	0.005	(8)	7439-92-1	EPA 200.8
Manganese	mg/L	0.05	(6)			7439-96-5	EPA 200.7
Molybdenum	mg/L	0.050	(10)			7439-98-7	EPA 200.7
Odor	units	3	(6)				SM 2150B
Silver	mg/L	0.1	(6)			7440-22-4	EPA 200.7
Sodium	mg/L	69	(12)			7440-23-5	EPA 200.7
Specific Conductance	µS/cm	900 - 2,200	(7)				SM 2510 B
Sulfate	mg/L	250 - 600	(7)			14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	500 - 1,500	(7)				SM 2540 C
Turbidity	NTU	5	(6)				EPA 180.1
Zinc	mg/L	5	(6)			7440-66-6	EPA 200.7
Radioactivity							
Gross Alpha	pCi/L	15	(3)	3	(3)		SM 7110C

Delta-Mendota Canal
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Table 3. Water Quality Standards, Annual Full Analysis

Constituent	Units	Maximum Contaminant Level	Detection Limit for Reporting	CAS Registry Number	Recommended Analytical Method
Organic Chemicals					
Alachlor	mg/L	0.002 (4)	0.001 (5)	15972-60-8	EPA 535
Atrazine	mg/L	0.001 (4)	0.0005 (5)	1912-24-9	EPA 508.1
Bentazon	mg/L	0.018 (4)	0.002 (5)	25057-89-0	EPA 515.1-4
Benzo(a)pyrene	mg/L	0.0002 (4)	0.0001 (5)	50-32-8	EPA 525.2
Carbofuran	mg/L	0.018 (4)	0.005 (5)	1563-66-2	EPA 531.1-2
Chlordane	mg/L	0.0001 (4)	0.0001 (5)	57-74-9	EPA 505
Chlorpyrifos	µg/L	0.025 (11)		2921-88-2	EPA 8141
2,4-D	mg/L	0.07 (4)	0.01 (5)	94-75-7	EPA 515.1-4
Dalapon	mg/L	0.2 (4)	0.01 (5)	75-99-0	EPA 552.1
Dibromochloropropane (DBCP)	mg/L	0.0001 (4)	0.00001 (5)	96-12-8	EPA 504.1
Di(2-ethylhexyl)adipate	mg/L	0.4 (4)	0.005 (5)	103-23-1	EPA 506
Di(2-ethylhexyl)phthalate (DEHP)	mg/L	0.004 (4)	0.003 (5)	117-81-7	EPA 506
Diazinon	µg/L	0.16 (11)		333-41-5	EPA 507
Dinoseb	mg/L	0.007 (4)	0.002 (5)	88-85-7	EPA 515.1-4
Diquat	mg/L	0.02 (4)	0.004 (5)	85-00-7	EPA 549.1-2
Endothall	mg/L	0.1 (4)	0.045 (5)	145-73-3	EPA 548.1
Endrin	mg/L	0.002 (4)	0.0001 (5)	72-20-8	EPA 505
Ethylene Dibromide (EDB)	mg/L	0.00002 (4)	0.00002 (5)	106-93-4	EPA 504.1
Glyphosate	mg/L	0.7 (4)	0.025 (5)	1071-83-6	EPA 547
Heptachlor	mg/L	0.00001 (4)	0.00001 (5)	76-44-8	EPA 505
Heptachlor Epoxide	mg/L	0.00001 (4)	0.00001 (5)	1024-57-3	EPA 505
Hexachlorobenzene	mg/L	0.001 (4)	0.0005 (5)	118-74-1	EPA 1625
Hexachlorocyclopentadiene	mg/L	0.05 (4)	0.001 (5)	77-47-4	EPA 1625
Lindane	mg/L	0.0002 (4)	0.0002 (5)	58-89-9	EPA 505
Methoxychlor	mg/L	0.03 (4)	0.01 (5)	72-43-5	EPA 505
Molinate	mg/L	0.02 (4)	0.002 (5)	2212-67-1	EPA 525.2
Pentachlorophenol	mg/L	0.001 (4)	0.0002 (5)	87-86-5	EPA 4010A
Picloram	mg/L	0.5 (4)	0.001 (5)	1918-02-1	EPA 515.1-4
Oxamyl	mg/L	0.05 (4)	0.02 (5)	23135-22-0	EPA 531.1-2
Polychlorinated Biphenyls (total)	mg/L	0.0005 (4)	0.0005 (5)	various	EPA 505
Simazine	mg/L	0.004 (4)	0.001 (5)	122-34-9	EPA 508.1
Thiobencarb	mg/L	0.07 (4)	0.001 (5)	28249-77-6	EPA 525.2
Toxaphene	mg/L	0.003 (4)	0.001 (5)	8001-35-2	EPA 505
2,3,7,8-TCDD (Dioxin)	mg/L	3 x 10 ⁻⁸ (4)	5 x 10 ⁻⁹ (5)	1746-01-6	EPA 1613
2,4,5-TP (Silvex)	mg/L	0.01 (4)	0.001 (5)	93-72-1	EPA 515.1-4

Delta-Mendota Canal

Non-Project Surface Water Pump-in Program

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Table 3. Water Quality Standards, Annual Full Analysis

Sources:

Title 22 California Code of Regulations. Division 4 Environmental Health. Chapter 15 Domestic Water Quality and Monitoring Regulations. Sections 64401 et seq, as amended.

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.shtml

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dwregulations-2014-07-01.pdf

- (1) Title 22. Table 64431-A Maximum Contaminant Levels, Inorganic Chemicals
- (2) Title 22. Table 64432-A Detection Limits for Reporting (DLRs) for Regulated Inorganic Chemicals
- (3) Title 22. Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting
- (4) Title 22. Table 64444-A Maximum Contaminant Levels, Organic Chemicals
- (5) Title 22. Table 64445.1-A Detection Limits for Purposes of reporting (DLRs) for Regulated Organic Chemicals
- (6) Title 22. Table 64449-A Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Levels"
- (7) Title 22. Table 64449-B Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Level Ranges"
- (8) Title 22. Table 64678-A DLRs for Lead and Copper
- (9) Title 22. Section 64678 (d) Lead Action level

California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

- (10) Basin Plan, Table III-1 (monthly mean concentration of boron and selenium in Grasslands water supply channels)
- (11) Basin Plan, Table III-2A (chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis)

Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

<http://www.fao.org/DOCREP/003/T0234E/T0234E00.HTM>

- (12) Ayers, Table 1 (mg/L) (sodium and boron)
 - (13) Ayers, Table 16 (mg/L) (boron tolerance in sensitive crops)
 - (14) US Environmental Protection Agency, May 2009. National Primary Drinking Water Regulations. EPA 816-F-09-004
 - (15) US Bureau of Reclamation
- revised: 12 Mar 2015

**Delta-Mendota Canal
Non-Project Ground Water Pump-in Program
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Table 4. Water Quality Standards, Monthly Testing

Constituent	Units	Maximum Contaminant Level	Detection Limit for Reporting	CAS Registry Number	Recommended Analytical Method
Arsenic	mg/L	0.010 (1)	0.002 (2)	7440-38-2	EPA 200.8
Boron	mg/L	0.7 (12)		7440-42-8	EPA 200.7
Manganese	mg/L	0.05 (6)		7439-96-5	EPA 200.8
Mercury	mg/L	0.002 (1)	0.001 (2)	7439-97-6	EPA 245.1
Nitrate (as NO ₃)	mg/L	45 (1)	2 (2)	7727-37-9	EPA 300.1
Nitrite (as nitrogen)	mg/L	1 (1)	0.4 (2)	14797-65-0	EPA 300.1
Selenium	mg/L	0.002 (10)	0.4	7782-49-2	EPA 200.8
Sodium	mg/L	69 (12)		7440-23-5	EPA 200.7
Specific Conductance	µS/cm	900 - 2,200 (7)			SM 2510 B
Sulfate	mg/L	250 - 600 (7)		14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	500 - 1,500 (7)			SM 2540 C

Sources:

Title 22 California Code of Regulations. Division 4 Environmental Health. Chapter 15 Domestic Water Quality and Monitoring Regulations. Sections 64401 et seq, as amended.

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.shtml

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dwregulations-2014-07-01.pdf

(1) Title 22. Table 64431-A Maximum Contaminant Levels, Inorganic Chemicals

(2) Title 22. Table 64432-A Detection Limits for Reporting (DLRs) for Regulated Inorganic Chemicals

(3) Title 22. Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting

(4) Title 22. Table 64444-A Maximum Contaminant Levels, Organic Chemicals

(5) Title 22. Table 64445.1-A Detection Limits for Purposes of reporting (DLRs) for Regulated Organic Chemicals

(6) Title 22. Table 64449-A Secondary Maximum Contaminant Levels "Consumer Ac²

(7) Title 22. Table 64449-B Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Level Ranges"

(8) Title 22. Table 64678-A DLRs for Lead and Copper

(9) Title 22. Section 64678 (d) Lead Action level

California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

(10) Basin Plan, Table III-1 (ug/L) (selenium in Grasslands water supply channels)

(11) Basin Plan, Table III-2A (ug/L) (chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis)

Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

<http://www.fao.org/DOCREP/003/T0234E/T0234E00.HTM>

(12) Ayers, Table 1 (mg/L) (sodium and boron)

(13) Ayers, Table 16 (mg/L) (boron tolerance in sensitive crops)

(14) US Environmental Protection Agency, May 2009. National Primary Drinking Water Regulations. EPA 816-F-09-004

<http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>

(15) US Bureau of Reclamation

revised: 12 Mar 2015

RECLAMATION

Managing Water in the West

Table 5a. Approved Laboratory List for the Mid-Pacific Region
Quality Assurance and Data Management Branch (MP-156)
Environmental Monitoring and Hazardous Materials Branch (MP-157)

APPL Laboratory	<u>Address</u>	908 North Temperance Avenue, Clovis, CA 93611
	<u>Contact</u>	Renee' Patterson, Project Manager
	<u>P/F</u>	(559) 275-2175 / (559) 275-4422
	<u>Email</u>	rpatterson@applinc.com; danderson@applinc.com;
	<u>Methods</u>	Approved for inorganic and organic parameters in water and soil
Applied Speciation and Consulting	<u>Address</u>	18804 North Creek Parkway Bothell, WA 98011
	<u>Contact</u>	Russell Gerads
	<u>P/F</u>	(425) 483-3300
	<u>Email</u>	russ@appliedspeciation.com
	<u>Methods</u>	Approved for selenium speciation and mercury speciation in water, solids, and tissue
Basic Laboratory	<u>Address</u>	2218 Railroad Avenue Redding, CA 96001
	<u>Contact</u>	Josh Kirkpatrick, Nathan Hawley, Melissa Hawley
	<u>P/F</u>	(530) 243-7234 / (530) 243-7494
	<u>Email</u>	jkirkpatrick@basiclab.com (QAO and PM); nhawley@basiclab.com, mhawley@basiclab.com (invoices); poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
	<u>Methods</u>	Approved for inorganic/organic parameters
California Laboratory Services	<u>Address</u>	3249 Fitzgerald Road Rancho Cordova, CA 95742
	<u>Contact</u>	Scott Furnas
	<u>P/F</u>	(916) 638-7301 / (916) 638-4510
	<u>Email</u>	janetm@californialab.com (QA); scottf@californialab.com (PM)
	<u>Methods</u>	Approved for inorganic, organic, and microbiological parameters in water
Calscience Environmental Laboratories	<u>Address</u>	7440 Lincoln Way; Garden Grove, CA 92841
	<u>Contact</u>	Don Burley
	<u>P/F</u>	714-895-5494 (ext. 203)/714-894-7501
	<u>Email</u>	DBurley@calscience.com
	<u>Methods</u>	Approved for inorganic and organic parameters in water, sediment, and soil.
Caltest Analytical Laboratory	<u>Address</u>	1885 N. Kelly Rd. Napa, CA 94558
	<u>Contact</u>	Eli Greenwald, Patrick Ingram (Lab Director)
	<u>P/F</u>	(707) 258-4000/(707) 226-1001
	<u>Email</u>	eli_greenwald@caltestlabs.com; Patrick_Ingram@caltestlabs.com info@caltestlabs.com
	<u>Methods</u>	Approved for inorganic and microbiological parameters
Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	<u>Address</u>	750 Royal Oaks Drive Ste. 100 Monrovia, CA 91016 USA
	<u>Contact</u>	Joline Neal
	<u>P/F</u>	(626) 386-1100, Linda - (626) 386-1163, Rick - (626) 386-1157
	<u>Email</u>	JolineNeal@eurofinsus.com
	<u>Methods</u>	Approved for all inorganic, organic, and radiochemistry parameters in water
Fruit Growers Laboratory	<u>Address</u>	853 Corporation Street Santa Paula, CA 93060 USA
	<u>Contact</u>	David Terz, QA Director

Table 5a. Approved Laboratory List for the Mid-Pacific Region
Quality Assurance and Data Management Branch (MP-156)
Environmental Monitoring and Hazardous Materials Branch (MP-157)

	<u>P/F</u>	(805) 392-2024 / (805) 525-4172
	<u>Email</u>	davidt@fglinc.com
	<u>Methods</u>	Approved for general physical analysis in soils and most inorganic and organic parameters in water and soil; not approved for mercury in water or silver in soil.
Moore Twining Associates, Inc.	<u>Address</u>	2527 Fresno St., Fresno, CA 93721 USA
	<u>Contact</u>	Juli Adams (Lab Director), Maria Manuel (QA Manager)
	<u>P/F</u>	(559) 268-7021
	<u>Email</u>	julia@mooretwining.com, mariam@mooretwining.com
	<u>Methods</u>	Approved for BOD analysis.
Sierra Foothill Laboratory, Inc.	<u>Address</u>	255 Scottsville Blvd, Jackson, CA 95642
	<u>Contact</u>	Sandy Nurse (Owner) or Karen Lantz (Program Manager)
	<u>P/F</u>	(209) 223-2800 / (209) 223-2747
	<u>Email</u>	sandy@sierrafoothilllab.com, CC: dale@sierrafoothilllab.com
	<u>Methods</u>	Approved for all inorganic parameters (except low level TKN), microbiological parameters, acute and chronic toxicity.
South Dakota Agricultural Laboratories	<u>Address</u>	Brookings Biospace, 1006 32nd Avenue, Suites 103,105, Brookings, SD 57006-4728
	<u>Contact</u>	Regina Wixon, Jessie Davis, Steven Hauger (sample custodian)
	<u>P/F</u>	(605) 692-7325/(605) 692-7326
	<u>Email</u>	regina.wixon@sdaglabs.com, annie.mouw@sdaglabs.com, emily.weissenfluh@sdaglabs.com, darin.wixon@sdaglabs.com
	<u>Methods</u>	Approved for selenium analysis
TestAmerica	<u>Address</u>	880 Riverside Parkway West Sacramento, CA 95605 USA
	<u>Contact</u>	Linda Laver
	<u>P/F</u>	(916) 374-4362 / (916) 372-1059 fax
	<u>Email</u>	Linda.Laver@TestAmericaInc.com
	<u>Methods</u>	Approved for all inorganic parameters and hazardous waste organics . Ag analysis in sediment, when known quantity is present, request 6010B
Western Environmental Testing Laboratories	<u>Address</u>	475 East Greg Street # 119 Sparks, NV 89431 USA
	<u>Contact</u>	Kurt Clarkson/Logan Greenwood (Client Services), Andy Smith (Lab Director)
	<u>P/F</u>	(775) 355-0202 / (775) 355-0817
	<u>Email</u>	kurtc@wetlaboratory.com, logang@wetlaboratory.com, andy@wetlaboratory.com
	<u>Methods</u>	Approved for inorganic parameters (metals, general chemistry) and coliforms.

Revised: 04 Nov 2014

Table 5b. Approved Laboratory Matrix for the Mid-Pacific Region
Quality Assurance and Data Management Branch (MP-156)
Environmental Monitoring and Hazardous Materials Branch (MP-157)

Laboratory	Water					Sediment/Soil				Tissue/Vegetation	
	Inorganic	Organic	Micro-biological	Radio-chemistry	Toxicity	Inorganic	Organic	General physical	Toxicity	Inorganics	Organics
APPL Laboratory	X	X				X	X				
Applied Speciation and Consulting	X*	X*				X*	X*			X*	X*
Basic Laboratory	X	X				X	X				
California Laboratory Services	X	X	X								
Calscience Environmental Laboratories	X	X				X	X				
Caltest Analytical Laboratory	X		X								
Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	X	X		X							
Fruit Growers Laboratory	X (not for mercury)	X				X (not for silver)	X	X			
Moore Twining Associates	BOD										
Sierra Foothill Laboratory, Inc.	X (not for TKN)		X		X				X		
South Dakota Agricultural Laboratories	selenium					selenium				selenium	
TestAmerica	X	X				X	X				
Western Environmental Testing Laboratories	X		X								

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
2015 Water Quality Monitoring Plan

Table 6. Parameters for Accepting Non-Project Surface Water in the Upper DMC

Parameter	Values in the DMC
Upper DMC between Jones PP and Check 13	
Minimum dilution flow from Jone PP	More than 500 cfs
Specific conductance (EC)* at Check 13	Not to exceed 1,000 $\mu\text{S}/\text{cm}$
Increase in Conductance*	Less than 50 $\mu\text{S}/\text{cm}$

* Duration of five consecutive days or more

U.S. Bureau of Reclamation
Central Valley Project - Delta-Mendota Canal

Appendix A. Mass Balance for Surface Water Pump-in Sites along the Delta-Mendota Canal, Headworks to Check 13

[illegible]

Appendix B

Cultural Resources Determination



IN REPLY
REFER TO:

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

MP-153
ENV-3.00

VIA ELECTRONIC MAIL ONLY

October 30, 2013
MEMORANDUM

To: Ben Lawrence
Natural Resource Specialist, South Central California Area Office

From: William E. Soule
Archaeologist, Division of Environmental Affairs

Subject: Section 106 Compliance for: 14-SCAO-018: Warren Act Contract for Conveyance of Treated Recycled Water from the City of Turlock to the Del Puerto Water District.

This proposed undertaking by Reclamation is the execution of a Warren Act contract for the conveyance of from 10,000 AF to a maximum of 13,400 AF of recycled water from the City of Turlock. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such historic properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR Part 800.3(a)(1).

The City of Turlock currently discharges 10,000 AF of treated recycled water to the San Joaquin River per year. They have requested a Warren Act Contract for conveyance in federal facilities of this water to Del Puerto Water District by way of Patterson Irrigation District and the Delta-Mendota Canal. As development and treatment capacity increases in the future, the volume conveyed could increase up to a maximum of 13,400 AF. All water would be conveyed by existing facilities. The duration of the WAC is still under discussion, but it would be at least five years and no longer than twenty years.

After reviewing the submitted materials, I concur with a statement in the EA for this action that it does not have the potential to cause effects to historic properties, should such historic properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR Part 800.3(a)(1). With this determination, Reclamation has no further NHPA Section 106 obligations. This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

CC: Cultural Resources Branch (MP-153), Anastasia Leigh – Regional Environmental Officer (MP-150)

Appendix C

Reclamation's Indian Trust Assets Determination



Lawrence, Benjamin <blawrence@usbr.gov>

Request for Determinations, SCCAO EA 13-050, Warren Act Contract for Conveyance from Turlock to Del Puerto Water District

RIVERA, PATRICIA <privera@usbr.gov>

Tue, Oct 29, 2013 at 3:09 PM

To: "Lawrence, Benjamin" <blawrence@usbr.gov>, Kristi Seabrook <kseabrook@usbr.gov>

Ben,

I reviewed the proposed action to approve the City of Turlock's request for a Warren Act Contract of the current conveyance discharges 10,000 AF of treated recycled water to the San Joaquin River per year to be conveyed to Del Puerto Water District by way of Patterson Irrigation District and the Delta-Mendota Cana. This conveyance will be in federal facilities. As development and treatment capacity increases in the future, the volume conveyed could increase up to a maximum of 13,400 AF. All water would be conveyed by existing facilities. The duration of the WAC is still under discussion, but it would be at least five years and no longer than twenty years.

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

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Kristi this is admin