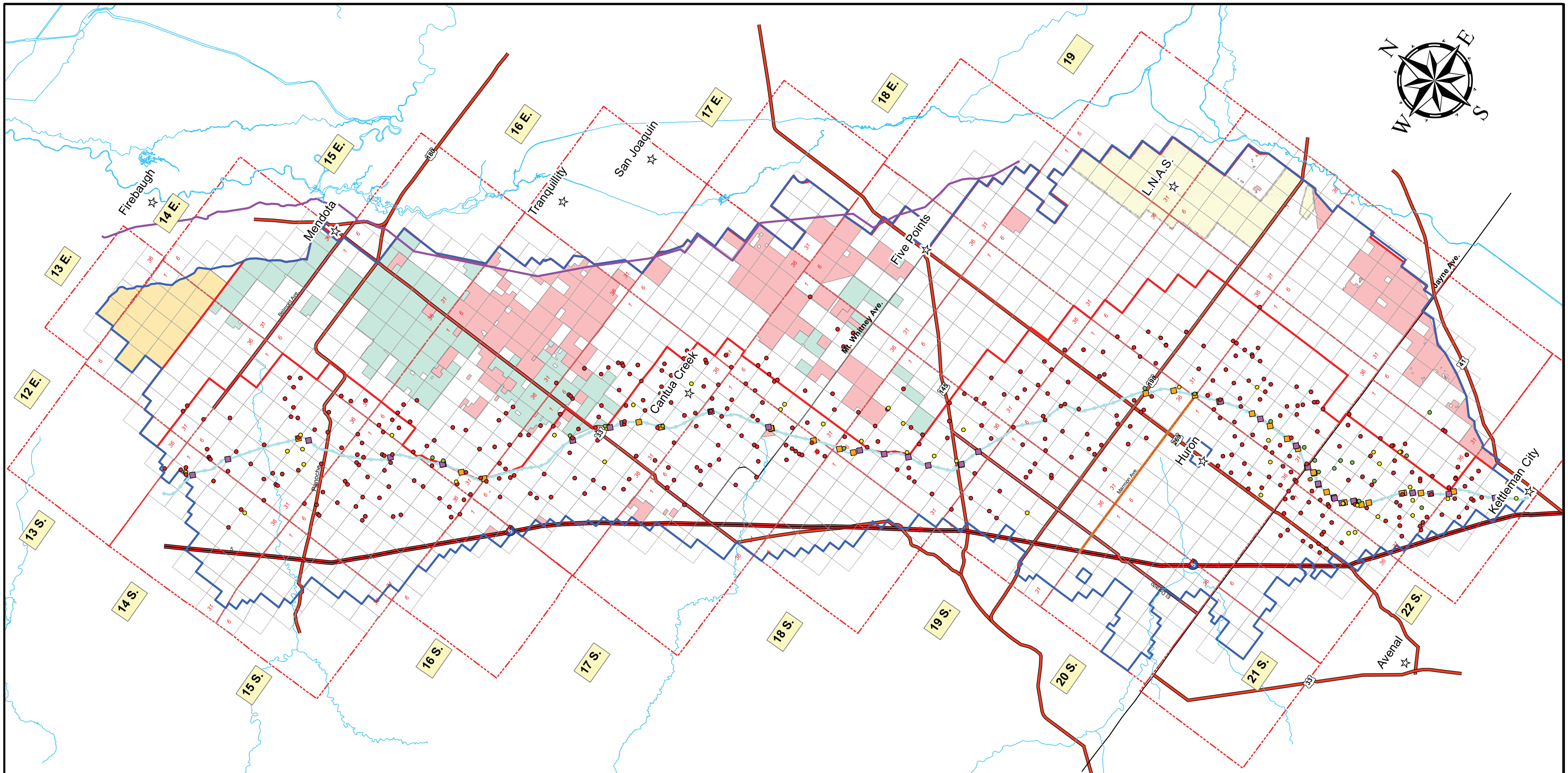
Appendix B

Source Well Locations



Legend

- ☆ City
- San Luis Canal
- San Luis Drain
- WWD Boundary
- 1998 Agreement Final-Settlement
- Town / Range

WWD Acquired Lands

- Britz Peck Settlement
- Broadview Water District
- Sagouspe Settlement
- L.N.A.S.

SLC Canal Injection Location

- 2014 Location
- Possible Future Location

Groundwater Source

- 2014 Participant
- Possible Future Participant
- Past Participant

0 1 2 4 6 8 10 Miles

WESTLANDS WATER DISTRICT
3130 N. FRESNO ST. FRESNO, CALIFORNIA 93703
559.224.1523 FAX 559.241.6277

LOCATIONS OF GROUND WATER WELLS
AND
SLC INJECTION LOCATION

DWG Date: 11/14/14	DRAWN BY J.RANGEL
DRAWING No. 2014-W-0038	
0	R:\DWGS\Archived\2014-W-0038\2014-W-0038.mxd

Appendix C

Reclamation’s Water Quality Requirements

RECLAMATION

Managing Water in the West

2015 San Luis Canal Pump-in Program Water Quality Monitoring Plan

U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
South-Central California Area Office Revised: 02 June 2015

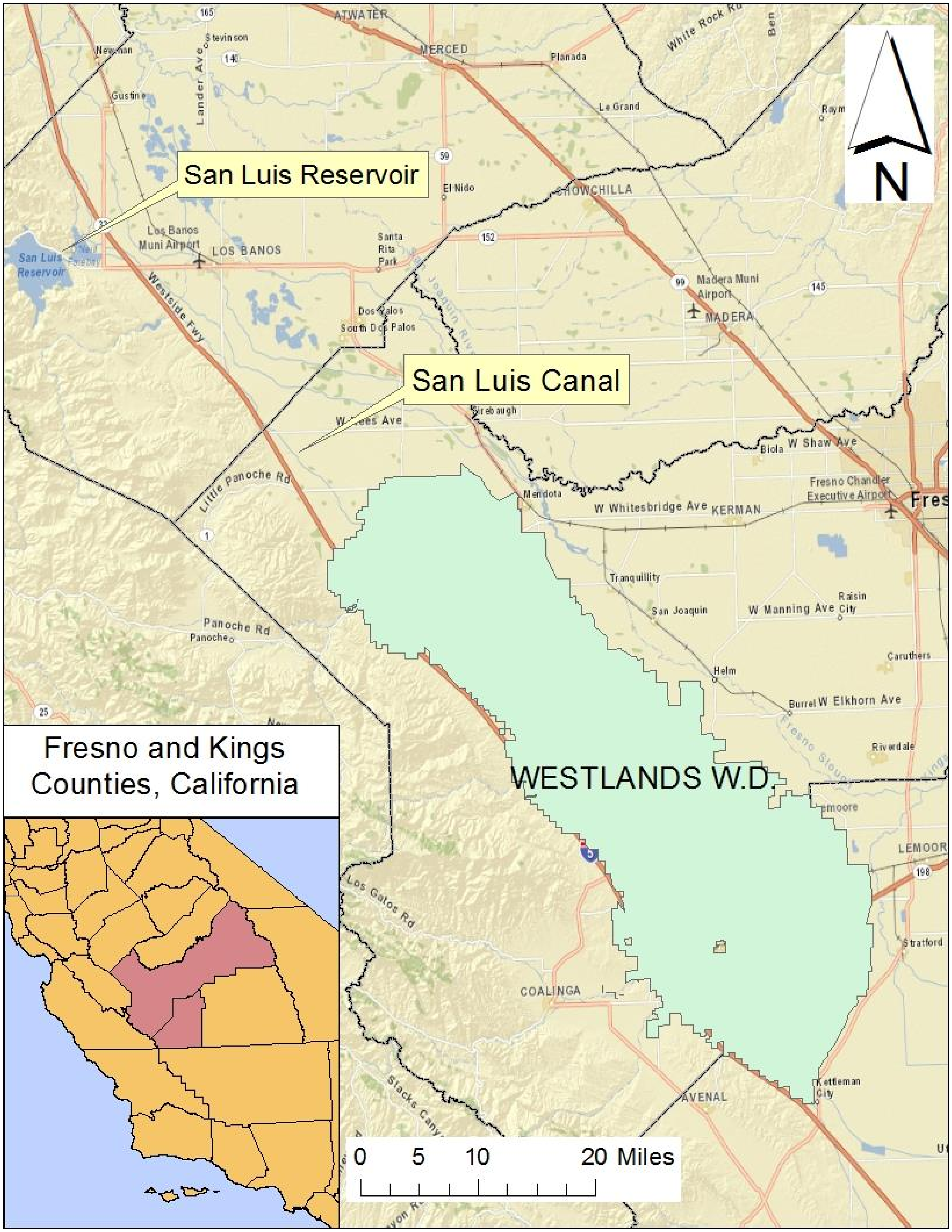
Mission Statements

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.

List of Abbreviations and Acronyms

COC	chain of custody
CVP	Central Valley Project
EC	electrical conductivity, µS/cm
Lateral 7	Connected to the San Luis Canal at Milepost 115.43L
mg/L	milligrams per liter, equivalent to parts per million
QA	Quality Assurance
QC	Quality Control
QCO	Quality Control Officer
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
San Luis Canal	The federal portion of the California Aqueduct
Check 13	San Luis Canal Milepost 66.74, O'Neill Forebay
Check 21	San Luis Canal Milepost 172.44, near Kettleman City
TDS	Total dissolved solids, mg/L
µg/L	micrograms per liter, equivalent to parts per billion
µS/cm	microSiemens per cm, salinity in water
Westlands or District	Westlands Water District


San Luis Reservoir
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LOS BANOS
CHOWCHILLA
MADERA
Mendota
KERMAN
Tranquillity
San Joaquin
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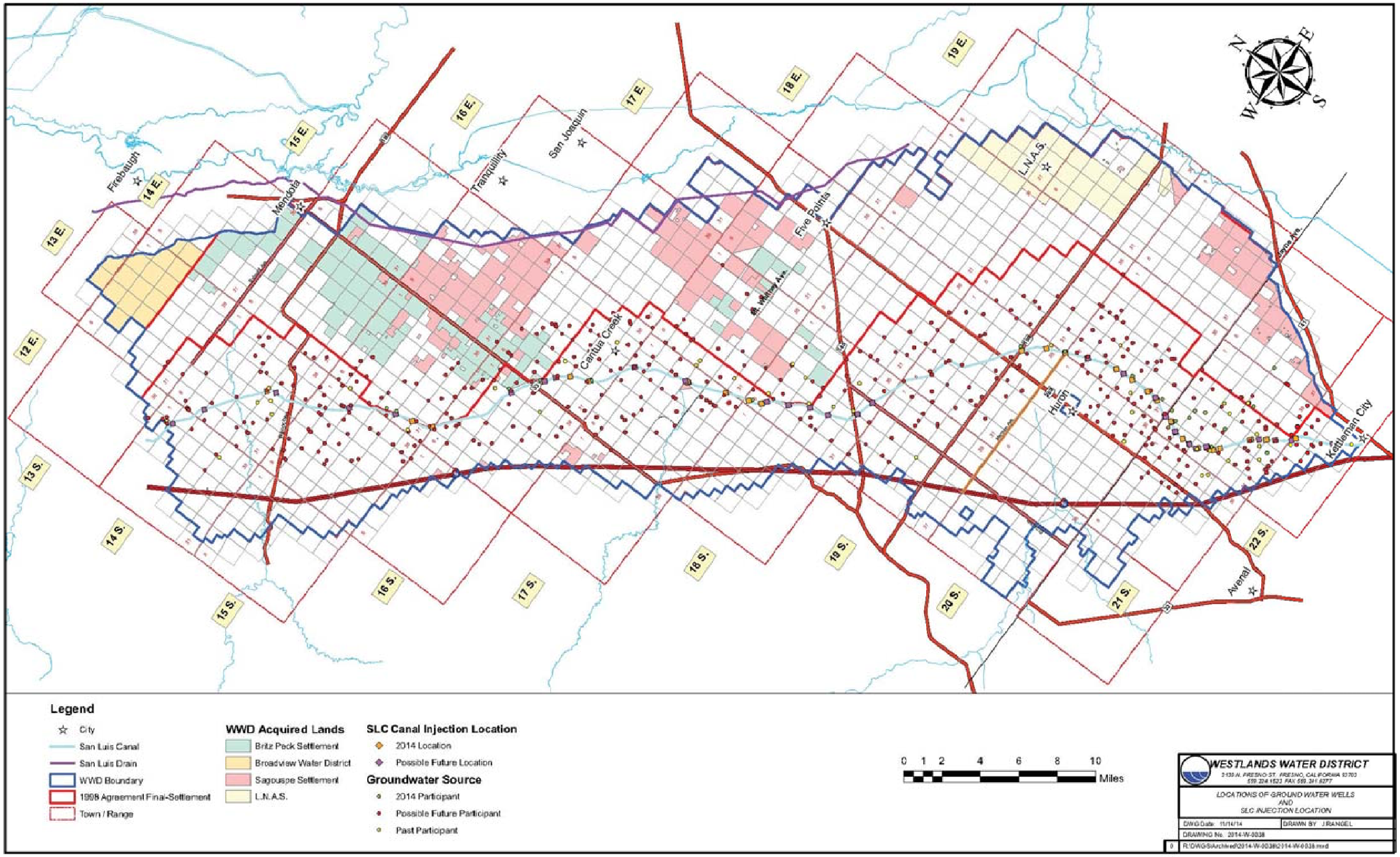
COALINGA
AVENAL
Kettleman City
LEMOORE
Riverdale
Caruthers
Firebaugh
Westside Fwy



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21 S.
22 S.
Firebaugh
Mendota
Tranquillity
San Joaquin
Cantua Creek
Five Points
L.N.A.S.
Huron
Kettleman City
Avenal
Legend
City
San Luis Canal
San Luis Drain
WWD Boundary
1998 Agreement Final-Settlement
Town / Range
WWD Acquired Lands
Britz Peck Settlement
Broadview Water District
Sagouspe Settlement
L.N.A.S.
SLC Canal Injection Location
2014 Location
Possible Future Location
Groundwater Source
2014 Participant
Possible Future Participant
Past Participant
0 1 2 4 6 8 10
Miles
WESTLANDS WATER DISTRICT
LOCATIONS OF GROUND WATER WELLS
AND
SLC INJECTION LOCATION
DWG Date 11/14/14
DRAWN BY J.RANGEL
DRAWING No. 2014-W-0038

2015 San Luis Canal Pump-in Program Water Quality Monitoring Plan

Introduction

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

In 2015, Reclamation proposes to execute a five-year Warren Act contract with Westlands Water District (Westlands) to pump up to 30,000 acre-feet per year of non-project water into the San Luis Canal. This would occur between April 1 and August 31 of years when the CVP allocation to Westlands is 20 percent or less. The non-project water would be pumped from wells located within Westlands and around the Mendota Pool. The wells within Westlands must meet California Drinking water standards (Title 22)[1].

The non-project water would either be directly delivered to agricultural users in Westlands, or exchanged for CVP water for agricultural users located upstream of the points of introduction, or stored in San Luis Reservoir for later delivery to Westlands via the San Luis Canal.

This document describes the plan for measuring the changes in the quality of water in the San Luis Canal caused by the conveyance of this non-project water, plus changes in groundwater elevation to estimate subsidence.

This document has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), in cooperation with the California Department of Water Resources (DWR) and the State Water Contractors.

Background

The federal Central Valley Project (CVP) delivers water to almost a million acres of farmland in the San Joaquin Valley of California. The CVP is also the sole source of clean water for several cities and for state, federal, and private wildlife areas in central California.

The source of CVP water for the western San Joaquin Valley is the Sacramento River conveyed through the Delta through the Delta-Mendota Canal. CVP water is pumped

[1] California Code of Regulations, Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010 4037), and Administrative Code (Sections 64401 et seq.), as amended. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-06-24-2010.pdf

from this canal into the O'Neill Forebay and San Luis Reservoir. CVP water is delivered to federal irrigation districts from the San Luis Canal between the O'Neill Forebay and Kettleman City.

This water is suitable in quality for irrigation and wetlands. The region is regularly affected by droughts that reduce the supply of water. Environmental regulations also restrict the operation of the federal and state pumping plants to divert water from the delta. The salinity of water in the Delta is highly variable due to the influence of tides and outflow of river water.

The San Luis Canal is a concrete-lined canal with a capacity ranging from 8,350 to 13,100 cfs. It is the federal section of the California Aqueduct and extends 102.5 miles from the O`Neill Forebay, near Los Banos, in a southeasterly direction to Kettleman City. The canal continues southerly to deliver water to southern California, mainly for municipal and industrial purposes. The State Water Contractors are the agencies that receive this water.

Westlands Water District (Westlands) is the largest contractor for CVP water. Most the water from the San Luis Canal is delivered to farms across Westlands through pressurized pipelines or "laterals".

WWD Lateral 7 is a buried pressurized pipeline connected to the San Luis Canal at Milepost 115.43L. The eastern end of Lateral 7 is connected to an open ditch that is linked to the Mendota Pool, south of the Mendota Wildlife Management Area. Water can be conveyed in this lateral in both directions.

The Warren Act of 1911[2] authorizes Reclamation to execute temporary contracts to impound, store, and carry water in federal irrigation canals when excess capacity is available. Reclamation may also execute other agreements per CVPIA[3] in which Reclamation will allow transfers of CVP water for groundwater.

As stated before, the CVP supply of water is limited by drought and environmental regulations. Farmers must use groundwater to supplement the supply of CVP water. The quality of local groundwater is variable and can have high concentrations of salts and trace metals. Many fields and orchards are not located near wells. Thus, Reclamation has allowed groundwater to be conveyed in the CVP canals to sustain remote fields and orchards.

2015 will be the fourth consecutive year of drought for central California. For the second year in a row, there will be no CVP water available for Westlands. Westlands has requested a five-year Warren Act Contract to convey up to 30,000 acre-feet per year of non-project water in the San Luis Canal.

[2] Act of February 21, 1911, ch. 141, 36 Stat. 925

[3] Section 3405(a) of the Central Valley Project Improvement Act (CVPIA) (Title 34 of Public Law 102-575)

Most of this non-project water will be pumped directly into the canal from wells located along the canal. Some will be pumped from wells into the Mendota Pool, and then pumped up to the canal through Westlands Lateral 7.

Our main concerns are 1) the potential degradation of water quality in the canal with the addition of this much groundwater, and 2) possible, irreversible damage to CVP and district facilities through subsidence from continuous pumping of these wells.

Each well operator must provide sufficient information about each well to confirm that the pumped water will be consistent, predictable, and acceptable in quality. Reclamation will execute a general license with Westlands for pump-in facilities across the canal embankment. Each discharge facility will have a totalizing flow meter and corporation stop for calibration and sample collection.

Staff from Westlands and DWR will calibrate flow meters on each point of discharge into the canal, and will record the volume pumped into the canal. Multiple wells may pump into the same discharge facility.

Staff from Westlands will take regular measurements of depth to groundwater. They will also coordinate all water quality sampling for this monitoring program. Staff from Westlands will compile all flow, water quality, and elevation data. Reclamation will review this data to estimate contaminant loading in the canal, to confirm that the water in the canal is safe for downstream water users, to prevent subsidence, and to determine the feasibility of continuing this program in the future.

Monitoring Mission and Goals

The mission of this monitoring program is to produce physical measurements that will determine the changes in the quality of the water in San Luis Canal caused by the conveyance of non-project water during 2015 - 2020. The data will be used to implement the terms of the 2015 Warren Act Contract with Westlands, and to ensure that the quality of CVP water is suitable for downstream water users. The monitoring program will also measure changes to groundwater resources to identify and prevent long-term problems to local aquifers and facilities.

Program Goals

The general goals of monitoring are:

- Evaluate the quality of water in each well.

- Confirm that the blend of CVP water and non-project water is suitable for all downstream users.

- Provide reliable data for regulation of the 2015 Warren Act to prevent contamination problems.

- Provide measurements of groundwater (depth) to identify overdraft and prevent subsidence.

Study Area

The Study Area is the San Luis Canal from the O'Neill Forebay (Check 13) to Kettleman City (Check 21). This canal is the federal portion of the California Aqueduct. The State Water Project conveys water downstream of Check 21 for agriculture and domestic uses. The Kern National Wildlife Refuge receives water indirectly from the canal in Kern County near Check 29.

A special study will be conducted by Reclamation of the effects of conveying water from Lateral 7 in the San Luis Canal. See Appendix C.

Water Quality Standards

All non-project water must meet California Drinking Water Standards (Title 22) before entering the canal. These constituents are listed in Table 5. A short list of constituents of concern (Table 4) will be used to test new wells, and for routine analysis of water in active wells.

Water Quality Monitoring Plan

Baseline Tests of Individual Wells

Table 4 is a short list of constituents of concern to be measured in each well:

- Annually, before pumping into the canal, to screen out non-compliant wells[4;]

- Weekly, for the first four weeks of pumping each year to determine that the water quality of the discharge is consistent, predictable, and reliable;

- Monthly, for the duration of this pump-in program each year.

Each well must be tested for all of the constituents listed in Table 5 before pumping in the San Luis Canal, and every three years during the term of the 2015 Warren Act Contract.

No non-project groundwater shall be pumped into the San Luis Canal that exceeds the Title 22 standards in Table 5 or fails to meet the conditional limits listed in Table 4. All new wells proposed to participate in the groundwater pump-in program must be approved Reclamation prior to discharging any groundwater into the San Luis Canal.

Westlands will tabulate water quality data in a spreadsheet format including all pertinent information such as laboratory methods and method reporting limits.

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[4] Reclamation will provide instructions for sampling groundwater.

Appendix B is a list of wells that are connected to the San Luis Canal that might participate in the 2015 Pump-in Program. Each well has been tested and meets the water quality standards listed in Table 5.

For new wells, we recommend that each well be tested for a short list of constituents (Table 4) to screen out non-compliant wells. Wells that do not meet the short list may not participate in the 2015 Pump-in Program. The costs of sampling and analysis of all non-project water will be billed to Westlands. Analyses should be conducted by a laboratory listed in Table 6.

Reclamation will accept full Title 22 analysis reports that are no more than three years old instead of a new Table 5 analysis. Each report must clearly identify the location of the well.

Reclamation will allow the introduction of water from two or more wells through one discharge point if the flow-weighted concentration of the blend will meet the Table 5 standards.

Westlands will provide the following information to Reclamation prior to pumping groundwater into the canal:

- the location of each well, pumping rate, and point of discharge in to the San Luis Canal (Appendix B);

- complete water quality analyses (Table 5) and Table 4 for new wells and each new year of pump-ins

- the depth to groundwater in every well before pumping into the San Luis Canal commences

Most of the wells are privately owned, so we will need assistance from Westlands' staff to provide access to each well for Reclamation and DWR staff.

When the Project is operating, Westlands will provide DWR and Reclamation with periodic (daily and weekly, as necessary) schedules which identify the approved source wells flow rates, locations of pump-in by Aqueduct Mile Post, and deliveries by Reach. Appendix D has examples of report forms used for the 2014 DWR program.

Westlands shall provide weekly updates identifying the current and anticipated water quality changes within the SLC by using the daily model. The goal is to provide Reclamation and the State Water Project Facilitation Group with a day-to-day prediction of downstream water quality using real-time pump-ins, real-time upstream background flows, and current background water quality data.

All water samples must be sampled and preserved according to established protocols in correct containers. Each sample of well water must be analyzed at the expense of the well owner.

Compliance Monitoring

Daily Salinity

Mean daily salinity will be assessed with the sensors along the canal that report real-time data to CDEC, listed in Table 1. These data will be downloaded by Reclamation to monitor daily changes along the canal.

Westlands and Reclamation will download daily average EC data for San Luis Canal Checks 13 and 21 to measure changes in salinity in the canal between these checks. Westlands and Reclamation will use mass balance models to estimate the contribution of salinity to the canal from the actively pumping wells, and compare this with the real-time data.

If the addition of the non-project water is increasing the salinity of water in the canal more than 50 uS/cm, Reclamation will work with Westlands and the well operators to turn off high salinity wells.

Westlands will run model simulations to quantify anticipated improvements in conductivity with the termination of pumping from specific wells. The participating wells with the highest salinity will be targeted first, continuing to the wells with the lowest concentrations until canal water quality stabilizes or improves. As salinity at Check 21 improves, wells will be brought on-line to commence pumping.

Routine Flow Monitoring

Westlands and DWR field staff will calibrate the flow meters for each discharge point and report the monthly volume of water pumped into the canal to DWR, WWD and Reclamation.

Routine Water Quality Monitoring – San Luis Canal

DWR will collect monthly grab samples at Checks 13 (KA007089) and 21 (KA017226) to measure trace metals and other minerals in the canal water. The data will be posted here:

http://www.water.ca.gov/waterdatalibrary/waterquality/station_group/select_station.cfm

DWR summarizes the data each month into this table:

http://www.water.ca.gov/swp/waterquality/docs/grab/GrabSampleTables/Table32/2015/wqtb0215.pdf

Reclamation will review these results to identify changes and will determine if they are caused by the addition of the non-project groundwater.

Routine Water Quality Monitoring – Lateral 7

Non-project water from the Mendota Pool will be pumped into the San Luis Canal from Westlands Lateral 7. Reclamation will collect grab samples of water from the lateral and from the canal upstream and downstream of this discharge point. Table 2b summarizes this special monitoring by Reclamation when WWD Lateral 7 is discharging into the san Luis Canal.

Reclamation will pay the costs to collect and analyze water samples from the canal and WWD Lateral 7 listed in Table 2b.

Water quality sampling of Lateral 7 will be conducted prior to initiation of discharge into the San Luis Canal, according to DWR's policy for acceptance of non-project water into the State Water Project. Lateral 7 must be tested for COCs listed in Table 4 for each year that discharges to the SLC are proposed. Discharges to the SLC from Lateral 7 must be approved by DWR and Reclamation prior to startup.

Two or more wells may be connected to the same discharge point as long as the blend meets current water quality standards. Reclamation and DWR may take field measurements of salinity in these blends.

DWR Monitoring of Wells

DWR may collect samples for water quality testing for any constituents of concern from any Westlands source well or at any point of water entry into the Aqueduct for testing. DWR will use Bryte Chemical Laboratory for all DWR well sample analyses and the data will be available to Westlands for review. If any well tested by DWR is found to exceed the identified MCL's, Reclamation will direct the District to stop pumping pending resampling and retesting by an independent laboratory.

Westlands will coordinate with well operators to provide access for DWR personnel to conduct any of the following activities on private property within WWD's service area during the term of this Proposal:

- Verification of metering calibration standards and requirements for flow meters located at the point of entry into the Aqueduct and at the point of delivery out of the Aqueduct,

- Collection of water samples from source wells and at the point of pump-in to the Aqueduct for testing of water quality,

- Any other activities deemed necessary by DWR to comply with the terms of this Proposal.

Depth to Groundwater

Westlands staff will measure the initial depth to groundwater in each well before pumping into the canal, and every three months while the well is active. The current depth to groundwater in each well will be compared to the initial depth measurement. If the current depth is more than 25 feet below the initial depth, Reclamation advise the District that pumping from that well be stopped until the depth recovers to an agreed upon depth.

Data Compilation and Review

Westlands will work closely with DWR field staff to schedule pumping and predict water quality effects in the canal. Westlands will provide daily forecasts of pumping to DWR as provided during 2014. Se Appendix D for examples of these reports.

All flow and water quality data collected by DWR and Westlands will be presented each month to Reclamation and DWR via e-mail. Reclamation and DWR will review the data to identify changes in the quality of water in the canal and in individual wells, and potential changes in the local aquifer that could lead to overdraft or subsidence. Reclamation, in consultation with DWR, will direct WWD on the continuation of pumping of groundwater into the San Luis Canal.

Water Quality Monitoring Parameters and Data Management

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 Parameter

DWR operates sensors along the San Luis Canal that measure salinity and temperature of water. These continuous measurements are posted on the Internet at:

http://cdec.water.ca.gov/

The values are preliminary and subject to calibration by DWR.

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

Table 4 is a short list of constituents to be measured at in each well prior to pumping into the San Luis Canal during 2015. The costs for collection and lab analyses for the Table 4 tests will be billed to WWD.

Once the well passes the short list, the well operator must have the well tested for the full suite of constituents listed in Table 5. All water analyses should be conducted by a laboratory that has been audited and approved by Reclamation listed in Table 6. Note all costs to collect and analyze the water for the Table 5 constituents must be paid by the well operator.

Once the water in the well has met the standards of Table 5, then that water may be pumped into the canal, subject to these routine Table 4 tests:

- Weekly, during the first month of pumping each year

- Monthly, for the duration of pumping each year, and

- Beginning of each year during the term of the 2015 Warren Act Contract.

Note that the Table 5 tests must be conducted every three years.

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. The laboratory will specify the sample volume, type of bottle, need for preservative, and special handling requirements for each constituent.

Chain of Custody documentation

Chain of custody (COC) forms will be used to document sample location, collection time, containers, preservation, and analysis. 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.

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 objectives 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.

The precision, accuracy, and contamination criteria will be used by the 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.

Reclamation will incorporate QC samples into batches of samples to verify the accuracy of the laboratory.

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.

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 and will make appropriate recommendations to the Contracting Officer given a belief or finding of inadequacy.

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

This program will use data from several independent sources. Each collecting agency will be responsible for its data reduction (analysis), internal data quality control, data storage, and data retrieval.

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.

Data Reporting

Real-time measurements of salinity in the San Luis Canal will be taken by DWR and reported on the California Data Exchange Center. In-stream water quality data will be collected by DWR and Reclamation. Routine measurements of flow from each discharge facility will be taken by DWR staff. WWD will measure the depth of groundwater in each well. All data will be compiled by Reclamation into monthly summary reports that will be shared with DWR, WWD, and the State Water Contractors.

Westlands will issue daily and weekly summaries of the pump-ins (Appendix D).

Westlands and Reclamation will compile salinity data in water balance models to predict the change in salinity in the canal with the addition of groundwater, and compare this with the real-time measurements. (Appendix E)

Reclamation and Westlands will compile all flow, water quality, and groundwater data into a final report for future reference.

Data Interpretation

Reclamation and Westlands will share all data for the canal and all wells pumping into the canal with DWR and the State Water Contractors.

Each week, Westlands staff will compile flow measurements. Reclamation will compile real-time salinity measurements (Table 1) with to determine the changes in salinity in the canal. Reclamation will use a mass balance to estimate how much of the observed change salinity is caused by the conveyance of groundwater in the San Luis Canal.

Reclamation will also review monthly water quality reports published by DWR to identify changes and will use the mass balance to determine how the non-project water has affected the canal.

Enforcement of Water Quality Standards

Reclamation will monitor the changes in instream salinity and water quality between Checks 13 and 21 using real-time data and results of monthly grab samples reported by DWR. **Table 3** is a list of the maximum allowable changes in salinity and water quality attributable to the addition of the non-project groundwater.

Reclamation and DWR will conduct field measurements of each discharge to confirm that water quality standards are being met. If any discharge is found not to meet the Title 22 limits, Reclamation will require Westlands to stop the pump-in of local groundwater into the Aqueduct immediately by telephone or electronic mail.

Reclamation will direct Westlands to stop the pump-in program if, in the judgment of DWR and Reclamation, its continuance could result in disruption of or damage to the SWP, including but not limited to unacceptable degradation of water quality.

Reclamation reserves the right to modify this monitoring program at any time. Additional constituents of concerns may be identified upon review of the well and instream data and be added to the monitoring as determined by DWR and Reclamation.

Revised: 02 June 2015 SCC-107 & DWR

Table 1. Real-Time Monitoring Stations

Location	Operating Agency	Parameters	Frequency	Remarks
San Luis Canal Check 13 O'Neill Forebay	DWR	EC	Real-time	CDEC Site: C13
San Luis Canal Check 21 Kettleman City	DWR	EC	Real-time	CDEC site : C21

Key: CDEC: California Data Exchange Center DWR: California Department of Water Resources

Table 2a. Routine San Luis Canal Water Quality Monitoring Stations

Location	Agency	Parameters	Frequency	Remarks
San Luis Canal Check 13 O'Neill Forebay	DWR Water Data Library	Minerals, metals, nutrients, pesticides	Monthly	Grab sample
San Luis Canal Check 21 Kettleman City			Monthly	Grab sample

Table 2b. Routine Monitoring of WWD Lateral 7

Location	Agency	Parameters	Frequency	Remarks
San Luis Canal Milepost 113.82 Lincoln Ave (upstream site)	Reclamation	EC, turbidity	Weekly	Field measurements
Westlands Lateral 7 at Adams Avenue	Reclamation	EC, turbidity, selenium[5][6]	Weekly	Field measurements, grab sample
San Luis Canal Milepost 15.43L WWD Lateral 7 turnout structure	Reclamation	EC, turbidity	Weekly	Field measurements
San Luis Canal Milepost 117.47 Manning Ave (downstream site)	Reclamation	EC, turbidity, selenium	Weekly	Field measurements

[5] Selenium will be measured in Lateral 7 because this CVP water is also delivered to the Mendota Wildlife Management Area.

[6] This water will also be tested for the Table 4 short list of constituents weekly for the first month and monthly for the duration while water is being pumped from Lateral 7 into the canal.

Table 3. Maximum allowable changes in the San Luis Canal caused by the addition of non-project groundwater

Constituent	Monitoring Location	Maximum concentration in the San Luis Canal
Daily Change in Electrical conductivity	San Luis Canal Checks 13 – 21	Less than 50 uS/cm increase between the checks
Electrical conductivity	San Luis Canal Check 21	More than 600 uS/cm
Concentration of any Title 22 constituent	San Luis Canal Check 21	Less than half of a Title 22 MCL

San Luis Canal
Non-Project Ground Water Pump-in Program
2015 Water Quality Monitoring Plan

Table 4. Water Quality Standards, Initial Test

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	2	(12)			7440-42-8	EPA 200.7
Bromide	mg/L		(16),(17)			24959-67-9	EPA 300.1
Chloride	mg/L	250	(7)			16887-00-6	EPA 300.1
Chromium, total	mg/L	0.05	(1),(17)	0.01	(2)	7440-47-3	EPA 200.7
Chromium, hexavalent	mg/L	0.01	(1),(17)			18540-29-9	EPA 218.6
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 NO3)	mg/L	45	(1)	2	(2)	7727-37-9	EPA 300.1
Selenium	µg/L	2	(10)	0.4		7782-49-2	EPA 200.8
Sodium	mg/L	69	(12)			7440-23-5	EPA 200.7
Sulfate	mg/L	250 - 600	(7)			14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	500-1500	(17)				SM 2540 C
Total Organic Carbon	mg/L		(16),(17)			7440-44-0	EPA 415.1
Gross alpha	pCi/L	15	(3),(17)	3	(3)	12587-46-1	SM 7110C
Field Measurements							
Specific Conductance	µS/cm	900-2200	(17)				SM 2510 B
Turbidity	NTU	5	(6)				EPA 180.1

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

(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 Contaminate 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 (ug/L) (selenium in Grasslands water supply channels), objective for water delivered to federal wildlife refuges.

(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 Promary Drinking Water Regulations. EPA 816-F-09-004

http://www.ehso.com/ehshome/DrWater/drinkingwaterepastds.php#list

(15) US. Environmental Protection Agency, Secondary Drinking Water Regulations.

http://www.ehso.com/ehshome/DrWater/drinkingwaterepastds.php#second

(16) Disinfection byproduct pre-cursors; Analyses requested by DWR, no MCL

(17) Department of Water Resources 2014 conditional permit level

revised: 02 June 2015

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Table 5. Water Quality Standards, 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	(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
Chromium, hexavalent	mg/L	0.01	(1)			18540-29-9	EPA 218.6
Cyanide	mg/L	0.15	(1)	0.1	(2)	74-90-8	EPA 335.2-4
Fluoride	mg/L	2	(14)	0.1	(14)	7681-49-4	EPA 340.1,2
Mercury, inorganic	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)			14797-73-0	EPA 314.0
Selenium	mg/L	0.05	(1)	0.005	(2)	7782-49-2	EPA 200.8
Thallium	mg/L	0.002	(1)	0.001	(2)	7440-28-0	EPA 200.8
Secondary							
Aluminum	mg/L	0.2	(6)			7429-90-5	EPA 200.7
Chloride	mg/L	250 - 600	(7)			16887-00-6	EPA 300.1
Color	Units	15	(6)				EPA 334
Copper	mg/L	1.0	(6)	0.05	(8)	7440-50-8	EPA 200.7
Iron	mg/L	0.3	(6)			7439-89-6	EPA 200.7
Lead	mg/L	0.015	(8)	0.005	(8)	7439-92-1	EPA 200.8
Manganese	mg/L	0.05	(6)			7439-96-5	EPA 200.7
Methyl tertiary butyl ether (MTBE)	mg/l	0.013	(6)			1634-04-4	EPA 8020
Odor	TON	3	(6)				EPA 140.1
pH	Units	6.5-8.5	(6)				EPA 150.1
Silver	mg/L	0.1	(6)			7440-22-4	EPA 200.7
Specific Conductance	µS/cm	900 - 2200	(7)				SM 2510 B
Sulfate	mg/L	250 - 600	(7)			14808-79-8	EPA 300.1
Thiobencarb	mg/L	0.001	(6)			28249-77-6	EPA 525.2
Total Dissolved Solids	mg/L	500 - 1500	(7)				SM 2540 C
Turbidity	NTU	5	(6)				EPA 180.1
Zinc	mg/L	5.0	(6)			7440-66-6	EPA 200.7
Other Constituents of Concern							
Boron	mg/L	2	(12)			7440-42-8	EPA 200.7
Bromide	mg/L		(16)			24959-67-9	EPA 300.1
Chlorpyrifos	µg/L	0.025	(11)			2921-88-2	EPA 8141
Diazinon	µg/L	0.16	(11)			333-41-5	EPA 507
Molybdenum	mg/L	0.050	(10)			7439-98-7	EPA 200.7
Sodium	mg/L	69	(12)			7440-23-5	EPA 200.7
Total organic carbon	mg/L		(16)			7440-44-0	EPA 415.1
Radioactivity							
Gross Alpha	pCi/L	15	(3)	3	(3)	12587-46-1	SM 7110C

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Table 5. Water Quality Standards, Full Analysis

Constituent	Units	Maximum Contaminant Level		Detection Limit for Reporting		CAS Registry Number	Recommended Analytical Method
Organic Chemicals							
VOC							
Benzene	mg/l	0.001	(4)	0.005	(5)	71-43-2	EPA 524.2
Carbon tetrachloride	mg/l	0.0005	(4)	0.0005	(5)	56-23-5	EPA 524.2
1,2-Dichlorobenzene	mg/l	0.6	(4)	0.0005	(5)	95-50-1	EPA 524.2
1,4-Dichlorobenzene (p-DCB)	mg/l	0.005	(4)	0.0005	(5)	106-46-7	EPA 524.2
1,1-Dichloroethane (1,1-DCA)	mg/l	0.005	(4)	0.0005	(5)	75-34-3	EPA 524.2
1-2,Dichloroethane (1,2-DCA)	mg/l	0.0005	(4)	0.0005	(5)	107-06-2	EPA 524.2
1,1-Dichloroethylene (1,1-DCE)	mg/l	0.006	(4)	0.0005	(5)	75-35-4	EPA 524.2
cis-1,2-Dichloroethylene	mg/l	0.006	(4)	0.0005	(5)	156-59-2	EPA 524.2
trans-1,2-Dichloroethylene	mg/l	0.01	(4)	0.0005	(5)	156-60-5	EPA 524.2
Dichloromethane (Methylene chloride)	mg/l	0.005	(4)	0.0005	(5)	75-09-2	EPA 524.2
1,2-Dichloropropane	mg/l	0.005	(4)	0.0005	(5)	78-87-5	EPA 524.2
1,3-Dichloropropene	mg/l	0.0005	(4)	0.0005	(5)	542-75-6	EPA 524.2
Ethylbenzene	mg/l	0.3	(4)	0.0005	(5)	100-41-4	EPA 524.2
Methyl tertiary butyl ether (MTBE)	mg/l	0.013	(4)	0.003	(5)	1634-04-4	EPA 524.2
Monochlorobenzene	mg/l	0.07	(4)	0.0005	(5)	108-90-7	EPA 524.2
Styrene	mg/l	0.1	(4)	0.0005	(5)	100-42-5	EPA 524.2
1,1,2,2-Tetrachloroethane	mg/l	0.001	(4)	0.0005	(5)	79-34-5	EPA 524.2
Tetrachloroethylene	mg/l	0.005	(4)	0.0005	(5)	127-18-4	EPA 524.2
Toluene	mg/l	0.15	(4)	0.0005	(5)	108-88-3	EPA 524.2
1,2,4-Trichlorobenzene	mg/l	0.005	(4)	0.0005	(5)	120-82-1	EPA 524.2
1,1,1-Trichloroethane (1,1,1-TCA)	mg/l	0.2	(4)	0.0005	(5)	71-55-6	EPA 524.2
1,1,2-Trichloroethane (1,1,2-TCA)	mg/l	0.005	(4)	0.0005	(5)	79-00-5	EPA 524.2
Trichloroethylene (TCE)	mg/l	0.005	(4)	0.0007	(5)	79-01-6	EPA 524.2
Trichlorofluoromethane (Freon 11)	mg/l	0.15	(4)	0.005	(5)	75-69-4	EPA 524.2
1,1,2-Trichloro-1,2,2-Trifluoroethane(Freon 113)	mg/l	1.2	(4)	0.01	(5)	76-13-1	EPA 524.2
Vinyl chloride	mg/l	0.0005	(4)	0.0005	(5)	75-01-4	EPA 524.2
Xylenes, total	mg/l	1.75	(4)	0.0005	(5)	95-47-6	EPA 524.2
SOC							
2,3,7,8-TCDD (Dioxin)	mg/L	3x10-8	(14)	5x10-9		1746-01-6	EPA 1613
2, 4, 5-TP (Silvex)	mg/L	0.05	(4)	0.001	(5)	93-72-1	EPA 515.1-4
2,4-D	mg/L	0.07	(4)	0.01	(5)	94-75-7	EPA 515.1-4
Alachlor	mg/L	0.002	(14)	0.001		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	(1)	0.0001		50-32-8	EPA 8310
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
Dalapon	mg/L	0.2	(14)	0.01		75-99-0	EPA 552.1
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.0002	(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 525.2
Di(2-ethylhexyl)phthalate (DEHP)	mg/L	0.004	(4)	0.003	(5)	117-87-7	EPA 3610B
Dinoseb	mg/L	0.007	(4)	0.002	(5)	88-85-7	EPA 515.1-4
Diquat	mg/L	0.02	(4)	0.04	(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	0.00005	(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 505/508

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Table 5. Water Quality Standards, Full Analysis

Constituent	Units	Maximum Contaminant Level		Detection Limit for Reporting		CAS Registry Number	Recommended Analytical Method
Hexachlorocyclopentadiene	mg/L	0.05	(4)	0.001	(5)	77-47-4	EPA 8120
Lindane (BHC-gamma)	mg/L	0.0002	(4)	0.002	(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
Oxamyl	mg/L	0.05	(4)	0.02	(5)	23135-22-0	EPA 531.1-2
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
Polychlorinated biphenyls (PCB)	mg/L	0.0005	(14)	0.0005		1336-36-3	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

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 Contaminate 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. Section 64672.3 Action levels 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 Promary Drinking Water Regulations. EPA 816-F-09-004

http://www.ehso.com/ehshome/DrWater/drinkingwaterepastds.php#list

(15) US. Environmental Protection Agency, Secondary Drinking Water Regulations.

http://www.ehso.com/ehshome/DrWater/drinkingwaterepastds.php#second

(16) Disinfection byproduct pre-cursors; Analyses requested by DWR, no MCL

revised: 26 May 2015

RECLAMATION
Managing Water in the West

Table 6. 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

Address	908 North Temperance Avenue, Clovis, CA 93611
Contact	Renee' Patterson, Project Manager
P/F	(559) 275-2175 / (559) 275-4422
Email	rpatterson@applinc.com; danderson@applinc.com;
Methods	*Approved for inorganic and organic parameters in water and soil*

Basic Laboratory

Address	2218 Railroad Avenue Redding, CA 96001 USA
Contact	Josh Kirkpatrick, Nathan Hawley, Melissa Hawley
P/F	(530) 243-7234 / (530) 243-7494
Email	jkirkpatrick@basiclab.com (QAO and PM); nhawley@basiclab.com, mhawley@basiclab.com (invoices); poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
Methods	*Approved for inorganic/organic parameters*

California Laboratory Services

Address	3249 Fitzgerald Road Rancho Cordova, CA 95742
Contact	Scott Furnas
P/F	(916) 638-7301 / (916) 638-4510
Email	janetm@californialab.com (QA); scottf@californialab.com (PM)
Methods	*Approved for inorganic, organic, and microbiological parameters*

Calscience Environmental Laboratories

Address	7440 Lincoln Way; Garden Grove, CA 92841
Contact	Don Burley
P/F	714-895-5494 (ext. 203)/714-894-7501
Email	DBurley@calscience.com
Methods	*Approved for inorganic and organic parameters in water, sediment, and soil.*

Caltest Analytical Laboratory

Address	1885 N. Kelly Rd. Napa, CA 94558
Contact	Mike Hamilton, Patrick Ingram (Lab Director)
P/F	(707) 258-4000/(707) 226-1001
Email	Mike_Hamilton@caltestlabs.com; Patrick_Ingram@caltestlabs.com info@caltestlabs.com
Methods	*Approved for inorganic and microbiological parameters*

Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)

Address	750 Royal Oaks Drive Ste. 100 Monrovia, CA 91016 USA
Contact	Linda Geddes (Project Manager), Rick Zimmer (quotes)
P/F	(626) 386-1100, Linda - (626) 386-1163, Rick - (626) 386-1157
Email	lindageddes@eurofinsus.com
Methods	*Approved for all inorganic, organic, and radiochemistry parameters in water*

Fruit Growers Laboratory

Address	853 Corporation Street Santa Paula, CA 93060 USA
Contact	David Terz, QA Director
P/F	(805) 392-2024 / (805) 525-4172
Email	davidt@fglinc.com
Methods	*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.*

RECLAMATION
Managing Water in the West

Table 6. Approved Laboratory List for the Mid-Pacific Region
Quality Assurance and Data Management Branch (MP-156)
Environmental Monitoring and Hazardous Materials Branch (MP-157)

Sierra Foothill Laboratory, Inc.	**Address**	255 Scottsville Blvd, Jackson, CA 95642
	Contact	Sandy Nurse (Owner) or Karen Lantz (Program Manager)
	P/F	(209) 223-2800 / (209) 223-2747
	Email	sandy@sierrafoothilllab.com, CC: dale@sierrafoothilllab.com
	Methods	*Approved for all inorganic parameters (except low level TKN), microbiological parameters, acute and chronic toxicity.*
South Dakota Agricultural Laboratories	**Address**	Brookings Biospace, 1006 32nd Avenue, Suites 103,105, Brookings, SD 57006-4728
	Contact	Regina Wixon, Jessie Davis, Steven Hauger (sample custodian)
	P/F	(605) 692-7325/(605) 692-7326
	Email	regina.wixon@sdaglabs.com, annie.mouw@sdaglabs.com, emily.weissenfluh@sdaglabs.com, darin.wixon@sdaglabs.com
	Methods	*Approved for selenium analysis*
TestAmerica	**Address**	880 Riverside Parkway West Sacramento, CA 95605 USA
	Contact	Linda Laver
	P/F	(916) 374-4362 / (916) 372-1059 fax
	Email	Linda.Laver@TestAmericaInc.com
	Methods	*Approved for all inorganic parameters and hazardous waste organics . Ag analysis in sediment, when known quantity is present, request 6010B*
Western Environmental Testing Laboratories	**Address**	475 East Greg Street # 119 Sparks, NV 89431 USA
	Contact	Kurt Clarkson/Logan Greenwood (Client Services), Andy Smith (Lab Director)
	P/F	(775) 355-0202 / (775) 355-0817
	Email	kurtc@wetlaboratory.com, logang@wetlaboratory.com, andy@wetlaboratory.com
	Methods	*Approved for inorganic parameters (metals, general chemistry) and coliforms.*

revised 18 April 2014

Appendix A. Department of Water Resources Water Quality Policy and Implementation Process for Acceptance of Non-Project Water into the State Water Project (October 2012)

Water Quality Assessment of Non-Project Turn-ins to the California Aqueduct, 2013

Technical Memorandum Report

State of California
Natural Resources Agency
DEPARTMENT OF WATER RESOURCES

December 2014

Appendix A. Department of Water Resources Water Quality Policy and Implementation Process for Acceptance of Non-Project Water into the State Water Project (October 2012)

It is the Department of Water Resources (DWR) policy to assist with the conveyance of water to provide water supply, and to protect the State Water Project (SWP) water quality within the California Aqueduct. To facilitate this policy DWR provides the following implementation process for accepting non-project water into the SWP (Policy). For purposes of this document, SWP and California Aqueduct are interchangeable and the same.

POLICY PROVISIONS

DWR shall consider and evaluate all requests for Non-Project (NP) water input directly into the SWP conveyance facilities based upon the criteria established in this document. NP water shall be considered to be any water input into the SWP for conveyance by the SWP that is not directly diverted from the Sacramento-San Joaquin Delta or natural inflow into SWP reservoirs.

The proponent of any NP water input proposal shall demonstrate that the water is of consistent, predictable, and acceptable quality.

DWR will consult with State Water Project (Contractors), existing NP participants and the Department of Public Health (DPH) on drinking water quality issues relating to NP water as needed to assure the protection of SWP water quality.

Nothing in this document shall be construed as authorizing the objectives of Article 19 of the SWP water supply contracts or DPH drinking water maximum contaminant levels to be exceeded.

This Policy shall not constrain the ability of DWR to operate the SWP for its intended purposes and shall not adversely impact SWP water deliveries, operation or facilities.

EVALUATING NP WATER PROPOSALS

DWR shall use a two-tiered approach for evaluating NP water for input into the California Aqueduct.

NP Tier 1

Tier 1 NP pump-in proposals (PIP) shall exhibit water quality that is essentially the same, or better, than what occurs in the California Aqueduct. PIP's considered to be tier 1 shall be approved by DWR (see baseline water quality tables 1 through 4).

NP Tier 2

Tier 2 PIP's are those that exhibit water quality that is different and possibly worse than in the California Aqueduct and/or have the potential to cause adverse impacts to the Contractors. Tier 2 PIP's shall be referred to a NP Facilitation Group (FG), which would review the project and if needed make recommendations to DWR in consideration of the PIP.

SWC Facilitation Group

This advisory group consists of representatives from each Contractor that chooses to participate and DWR. The group shall review tier 2 PIP's based on the merits, impacts, mitigation, water quality monitoring, cost/benefits or other issues of each PIP and provide recommendations to DWR. Upon initial review of tier 2 PIP by DWR, it shall then be submitted to the FG for review. A consensus recommendation from the FG would be sought regarding approval of the PIP. DWR shall base its decision on the merits of the PIP, recommendations of the FG and the PIP's ability to provide overall benefits to the SWP and the State of California.

Blending Water Sources

Blending of multiple water sources prior to inflow into the SWP is acceptable and may be preferred depending upon water quality of the PIP. Blending of water in this manner may be used to quality a project as NP Tier 1.

Mixing (blending) within the California aqueduct can be considered but shall not be adjacent to municipal and industrial (M&I) delivery locations. PIP's that are coordinating water discharged to maintain or improve SWP water quality are an example of the mixing approach. The PIP shall demonstrate by model or an approach acceptable to DWR and the FG that the water is adequately mixed before reaching the first M&I customer. Generally NP PIP's that involve mixing with SWP water shall be considered NP Tier 2.

Baseline Water Quality

To aid in developing and evaluating PIP's both historical and current SWP water quality levels shall be considered. A representative baseline water quality summary is shown in Tables 1 through 4, using historical SWP water quality records at O'Neill Forebay.

NP IMPLEMENTATION PROCESS

Project Proposals

The NP project proponent requesting to introduce water into the SWP shall submit a detailed PIP to DWR. The proponent shall demonstrate that the NP water is of consistent, predictable and reliable quality, and is responsible for preparing and complying with any and all contracts, environmental documents, permits or licenses that are necessary consistent with applicable laws, regulations, agreements, procedures, or policies.

Project Description

The proponent will submit to DWR a PIP describing the proposed program, identifying the water source(s), planned operation, characterizing the inflow water quality and any anticipated impacts to SWP water quality and/or operations. The PIP should be submitted at least one month prior to proposed start up to allow for DWR and FG review. The PIP shall include:

- Project proponent names, locations, addresses, and contact person(s).
- Maps identifying all sources of water, point of inflow to the SWP and ultimate fate of the introduced water.
- Terms and conditions of inflow, timing, rates and volumes of inflow, pumping, conveyance and storage requirements.
- Construction details of any facilities located adjacent to the SWP including valves, meters, and pump and piping size.
- All potential impacts and/or benefits to downstream SWP water contractors.
- Detailed water quality data for all sources of water and any blend of sources that will be introduced into the SWP.
- Identify anticipated water quality changes within the SWP.
- Identify other relevant environmental issues such as subsidence, ground water overdraft or, presents of endangered species.
- Provide performance measures and remedial actions that will be taken in the event projected SWP water quality levels are not met.
- Reference an existing contract or indicate that one is in process with DWR to conduct a PIP.

Water Quality Monitoring

In order to demonstrate that the water source(s) are of consistent, predictable, and acceptable quality the NP proponent shall monitor water quality. The proponent shall, for the duration of the program, regularly report on operations as they affect water quality, monitoring data and water quality changes. Both DPH title 22 and a short list of Constituents of Concern (COC) shall be monitored for based upon one of the following water quality monitoring options.

Constituents of Concern Current COC are Arsenic, Bromide, Chloride, Nitrate, Sulfate, Organic Carbon, and Total Dissolved Solids. These COC's may be changed as needed.

Water Quality Monitoring Options NP proponents shall select one of the testing options below and perform all water quality testing and provide analytical results in a timely manner as described herein. Monitoring shall be conducted for initial well start-up, periodic well re-testing and on-going testing during operation. Well data should be no more than three years old. Title 22 results should be provided to DWR and the FG within two weeks of testing and COC results within one week of testing, unless other schedules are agreed upon by DWR and the FG.

Option 1 - Baseline tests for Individual Wells

Well Start-up: Title 22 tests are required for all wells participating in the program prior to start-up. An existing title 22 test that is no more than three years old may be used. A Title 22 test may be substituted for any well near a similar well with a Title 22 test of record.

Well Re-testing: Title 22 test for all wells participating every three years.

Ongoing Monitoring: COC tests are required for all discharge locations to the SWP at start up and quarterly thereafter for new programs and resumption of established programs. New programs or those with constituents that may potentially degrade the SWP shall conduct at least weekly COC sampling of all discharge locations until the proponent demonstrates that the NP water is of consistent, predictable and reliable quality. Once the nature of the discharge has been clearly established, the COC tests are required quarterly for each discharge point.

Option 2 - Baseline tests for Representative Wells

Well Start-up: COC tests of record are required for all wells participating in the program and Title 22 tests of record are required for representative wells comprising a subset of all wells. This would typically be a group of wells that are manifold together and discharge to one pipe. Representative wells shall be identified on a case-by-case basis to be representative of the manifold area, well proximity, and water levels.

Well Re-testing: Same as required in Option 1.

On-going Monitoring: COC tests are required for all discharge locations to the SWP at start up and monthly thereafter for the duration of the program and annually at each well. New programs or those with constituents that may potentially degrade the SWP shall conduct weekly COC sampling of all discharge locations until the proponent demonstrates that the NP water is of consistent, predictable and reliable quality.

Option 3 – Self Directed

A PIP may propose a water quality monitoring program for approval by DWR and the FG that is different from options 1 or 2. It must include COC and title 22 testing that will fully characterize water pumped into the SWP and be at an interval to show a consistent, predictable and reliable quality.

Analytical Methods

Analytical laboratories used by project proponents shall be DPH certified by the Environmental Laboratory Accreditation Program (ELAP) and use EPA prescribed and ELAP accredited methods for drinking water analysis. Minimum Reporting Levels must be at least as low as the DPH required detection limits for purposes of reporting (DLR). The current DLRs are listed on the DPH website at Http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLsandPHGs. DWR shall continue to use Bryte Chemical Laboratory as it's analytical and reference lab.

Flow Measurements

The project proponent shall maintain current, accurate records of water production rate and volume from each source, as well as, each point of discharge into the SWP. All flow measurements shall be submitted to regularly to DWR.

RECONSIDERATION

If an NP proponent disagrees with the FG or DWR decision or feels that there is an overriding benefit of the proposal, the proponent may request reconsideration from DWR on the basis of overriding public benefit or water supply deficiency. DWR shall consider these requests on a case-by-case basis.

ONGOING PROGRAM

Any NP Proponent who has successfully established a NP water inflow program (Including existing Kern Fan Banking Projects, Kern Water Bank, Pioneer and Berrenda Mesa Projects, Semitropic Water Storage District Wheeler Ridge Mariposa Water Storage District and Arvin Edison Water Storage District) may reinitiate the program by notifying DWR at least ten days before inflow is scheduled to begin and provide the following information:

- Updated water quality data and/or updated modeling that adequately reflects the quality of water to be introduced into the SWP.
- Turn-in location.
- Expected rate and duration of inflow. DWR shall notify the FG of this reinitiating of inflow.
- Water quality monitoring schedule that meets the objective of this policy.

FUTURE NP PROGRAMS

Future NP projects should be planned and designed considering the following items:

- Projects involving water quality exceeding primary drinking water standards shall show that the water shall be treated or blended before it enters the SWP to prevent water quality impacts.
- The project proponent of a Tier 2 proposal should clearly identify and establish that water inflow shall be managed and operated such that poor quality water will be blended

with better quality water so that SWP water quality will not be degraded upon acceptable levels as determined by the FG and DWR.

- If a significant water supply deficiency exists and it is recommended by the FG that raw water quality criteria be set aside to ensure adequate supply, such action shall be subject to approval by the DPH.
- The project proponent of a NP inflow program which degrades SWP water quality shall identify mitigation to downstream water contractors for water quality impacts associated with increased water supply or treatment costs.

DWR ROLE

DWR shall seek, as needed, DPH or SWC recommendations on changes or additions to this document governing the NP water quality projects. The FG shall review proposed changes or additions prior to implementation by DWR, as needed.

DWR and or the United States Bureau of Reclamation (for San Luis Canal inflow) shall have ultimate responsibility for approving the water quality of all NP inflow, as well as, the oversight of monitoring and tracking the water quality of operating programs. DWR shall also ensure that the proponents of the NP inflow program perform according to their proposals, and will take appropriate action in the event of non-conformance.

Project Proposal Review Process

Upon receipt of a proposal for PIP, DWR shall review it for adequacy. DWR shall consider all PIPs based upon these guidelines. Review shall take no more than one month after receiving a complete program proposal. If necessary, DWR will convene timely meetings with the FG during the review. At a minimum the review will include

- Examination of all documents and data for completeness of the PIP.
- Notification of the affected Field Divisions, and the FG has been received by DWR.
- Consideration by DWR of comments from all parties before the final decision.
- Upon completion of the review DWR will notify the proponent and FG of the acceptance of the PIP or explain the reason(s) for rejecting it.
- DWR may reconsider a decision on a PIP based upon a recommendation from the FG. Reconsideration by DWR will be on a case-by-case basis.

<u>Periodic Review</u>

DWR may schedule periodic reviews of each operating NP inflow with input from the FG. As part of the review, program proponents shall provide the following information:

- Summary of deliveries to the Aqueduct.
- Water quality monitoring results.
- Proposed changes in the program operation.

The review may result in changes in monitoring and testing required of the program proponent as a result of;

- New constituents being added to the EPA /DPH list of drinking water standards.
- Changes in the maximum contaminant levels for the EPA/DPH list of drinking water standards.
- Identification of new constituents of concern.
- Changes in the water quality provided by the program.
- Changes in constituent background levels in the California Aqueduct.

This procedure shall recognize emerging contaminants and/or those detrimental to agricultural viability as they are identified by the regulatory agencies and shall set appropriate standards for water introduction based upon ambient levels in the California Aqueduct or State Notification Levels. Emerging contaminants are those that may pose significant risk to public health, but as yet do not have an MCL. Currently the Office of Environmental Health Hazard Assessment and the DPH establish Public Health Goals and Notification Levels, respectively. These levels, though not regulated, do provide health-based guidance to water utilities and can require public notification if exceeded.

Water Quality Review

DWR shall track and periodically report to the FG on water quality monitoring results on the SWP from NP water inflow and make all water quality data available to the public upon request.

- DWR shall review analyze and maintain all records of water quality testing conducted by the proponent of the well(s), source(s) and discharge(s) into the SWP.
- DWR shall determine what additional water quality monitoring, if any, is necessary within the SWP to ensure adequate protection of SWP water quality. DWR shall conduct all water quality monitoring within the SWP.
- DWR may prepare periodic reports of NP projects.

On-site Surveillance

The appropriate Field Division within DWR will be responsible for review and approval of all construction activities within the SWP right-of-way. Plans showing the discharge system piping, valves, sampling point, meters and locations must be submitted and approved prior to any construction. In addition, the appropriate Field Division will be responsible for confirmation of all meter readings and water quality monitoring conducted by the proponent.

- Field division staff may visit, inspect, and calibrate meters and measure flow conditions at each source or point of inflow into the SWP.
- Flow meters, sampling ports and anti-siphon valves must be conveniently located near the SWP right-of-way.
- Field division staff may collect water samples at each source or point of discharge into the SWP.
- The appropriate Field Division shall conduct additional water quality monitoring within the SWP, if deemed necessary, to assure compliance with the NP Inflow Criteria.

- DWR shall monitor aqueduct water quality and analyze several "split samples" of the water at the point of introduction into the aqueduct to ensure consistent analytical results.

Table A1 HISTORICAL WATER QUALITY CONDITIONS 1988 TO 2011 AT O'NEILL FOREBAY OUTLET (mg/L)

Parameter	Mean	Min.	Max.	Std. Dev.
Aluminum	0.03	0.01	0.527	0.05
Antimony	0.002	0.001*	0.005	0.002
Arsenic	0.002	0.001	0.004	0.001
Barium	0.05	0.05	0.068	0.002
Beryllium	0.001*	0.001*	0.001*	0.000
Bromide	0.22	0.04	0.54	0.16
Cadmium	0.003	0.001	0.005	0.002
Chromium	0.004	0.001	0.011	0.002
Copper	0.004	0.001	0.028	0.003
Fluoride	0.1	0.1	0.5	0.1
Iron	0.037	0.005	0.416	0.050
Manganese	0.009	0.005	0.06	0.007
Mercury	0.001	0.0002	0.001	0.0004
Nickel	0.001	0.001	0.004	0.0005
Nitrate	2.9	0.2	8.1	1.6
Selenium	0.001	0.001	0.002	0.0001
Silver	0.003	0.001	0.005	0.002
Sulfate	42	14	99	15
Total Organic Carbon	4.0	0.8	12.6	1.6
Zinc	0.007	0.005	0.21	0.01

*These values represent reporting limits. Actual values would be lower

Table A2 O'Neill Forebay Outlet Total Dissolved Solids Criteria by Water Year Classification, 1988-2011 (mg/L)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Wet	227.2	262.5	295.4	228.9	213.8	231.2	184.4	226.5	181.5	171.4	195.7	157.3
Near Normal	317.9	324.7	351.7	295.4	268.1	302.7	270.0	285.1	230.1	211.9	170.9	202.6
Dry	286.4	319.6	370.0	362.0	344.2	305.2	240.4	278.2	307.3	234.8	269.0	336.6
Critical	256.6	312.9	372.9	367.0	361.0	335.0	307.1	291.8	335.1	325.7	339.4	328.8

* Year type is based on water year classification. Below normal and above normal year types have been combined into one designation called "near normal."

Table A3 O'Neill Forebay Outlet Bromide Criteria by Water Year Classification, 1988-2011 (mg/L)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Wet	0.19	0.24	0.28	0.13	0.10	0.12	0.12	0.17	0.12	0.12	0.13	0.10
Near Normal	0.31	0.31	0.34	0.21	0.15	0.15	0.18	0.22	0.15	0.15	0.14	0.19
Dry	0.25	0.29	0.35	0.35	0.24	0.20	0.17	0.24	0.27	0.13	0.29	0.41
Critical	0.26	0.28	0.32	0.37	0.33	0.27	0.22	0.22	0.28	0.28	0.32	0.37

* Year type is based on water year classification. Below normal and above normal year types have been combined into one designation called "near normal."

Table A4 O'Neill Forebay Outlet Total Organic Carbon Criteria by Water Year Classification, 1988-2011 (mg/L)

Year Type*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Wet	2.8	2.9	3.9	5.2	4.8	3.8	3.9	3.4	3.1	3.2	3.1	2.7
Near Normal	3.7	4.1	4.0	7.0	6.3	5.6	4.7	4.4	4.0	3.3	3.3	3.4
Dry	3.0	3.0	4.0	5.7	4.8	5.7	4.5	3.6	3.7	2.9	2.9	2.7
Critical	2.8	3.1	3.3	4.9	6.0	5.7	4.7	4.0	3.8	3.9	4.0	3.5

* Year type is based on water year classification. Below normal and above normal year types have been combined into one designation called "near normal."

Appendix B. WWD well list with location, lab summary, flow rates

2015 San Luis Canal Pump-in Program Monitoring Plan
Appendix B. List of Wells

2015 status	San Luis Canal Milepost	Facility Type	State Well ID	Operator	cfs
	105.00L	Direct Discharge	141202R01		
	105.20L	Direct Discharge	141202R02		
	107.10R	Direct Discharge	141225D01	Cardella Fundus	
	107.63R	Direct Discharge	141319R01		
	108.85L	Direct Discharge	141316N05		
ok	110.49L	Direct Discharge	141322P01	Cardella Fundus	1.66
	110.52L	Direct Discharge	141323EO2		
	111.02R	Direct Discharge	141327 E01		
	111.91R	Direct Discharge	151305D02		
	113.77X	Direct Discharge	141628P01		
	114.00R	Direct Discharge	151316L01		
>2 se	114.95L	Direct Discharge	151407 E01	Wayne Gowens 7-1	3.50
>2 se	115.43L	Direct Discharge	Lateral 7 Reverse Flow	Westlands WD	40.0
	116.91R	Direct Discharge	151322M01		
>2 se	117.52L	Direct Discharge	151419F01	J Giacone & Sons 19-1	3.0
ok	117.52L	Direct Discharge	151419Q01	J Giacone & Sons 19-2	3.0
ok	118.46R	Direct Discharge	151431D02	Coburn Ranch	4.5
	120.80L	Direct Discharge	161404D01		
	122.59RA	Direct Discharge	161427P01		
	123.05L	Direct Discharge	161403H01		
	123.89R	Direct Discharge	161424 E01		
ok	124.18L	Direct Discharge	161412N02	Sumner Peck 13-1	5.0
	125.33R	Direct Discharge	161506P02		
ok	125.99L	Direct Discharge	161518P04	Sumner Peck 18-2	5.5
	126.65L	Lateral 12L	161520H01		
ok	127.40L	Direct Discharge	161521N03	Michael Gragnani 3S	4.0
ok	127.40L	Direct Discharge	161521L01	Michael Gragnani 3N	2.0
>2 se	128.50L	Direct Discharge	161533J01/J02	Alexa Sophia 33	3.0
>2 se	128.50L	Direct Discharge	161532A01/A06	Alexa Sophia 32	5.0
ok	128.49R	Direct Discharge	171413A01	Britz Hyland 13-1	3.5
ok	130.81R	Direct Discharge	171510M01	Burford SW10	4.0
	132.77L	Direct Discharge	171513A01		
ok	133.80L	Direct Discharge	171601N03	CMA General 1SW	2.5
ok	133.80L	Direct Discharge	171614Q01	CMA General 14SE	6.0
ok	133.81L	Direct Discharge	171623M01	CMA General 23NW	4.0
	135.48RA	Direct Discharge	171526A01		
	135.96R	Lateral 14R	171526L01		
	137.00R	Lateral 15R	171536Q02		
ok	137.31L	Direct Discharge	171623J01	CMA General 23SE	2.3
>2 se	137.83L	Direct Discharge	181606F01	CMA General 6NE	4.0
	138.24L	Direct Discharge	181605N01		
	139.40L	Direct Discharge	181609R01		
	140.55LA	Direct Discharge	181617R02		
	141.02R	Direct Discharge	181620F01		
	141.55L	Direct Discharge	181621Q02		
	142.58R	Direct Discharge	181629N02		
	143.00L	Direct Discharge	181627N01		
	143.20L	Direct Discharge	191610 E01		
	146.35L	Direct Discharge	181720N02		
	147.75RC	Direct Discharge	191720B01		
ok	152.70L	Direct Discharge	191723R01	Sageberry 23-2	2.0
	153.10R	Direct Discharge	191726H01		

Appendix B. List of Wells

2015 status	San Luis Canal Milepost	Facility Type	State Well ID	Operator	cfs
ok	154.10L	Direct Discharge	191736A01	AFW 36-1	4.5
	154.10L	Direct Discharge	191836N01		
ok	155.15L	Direct Discharge	191831N01	AFW well 31-1	2.0
>2 se	156.36R	Direct Discharge	201712H01	Woolf Family 12-1	3.5
ok	156.36R	Direct Discharge	201714K01	Woolf Family 14-2N	4.4
	156.37LA	Direct Discharge	201806Q01		
	156.40L	Lateral 31	201808M01		
>2 se	157.98L	Direct Discharge	201817G01	Sageberry 12-3 (17-3)	1.5
	158.47R	Lateral 32	201714R01		
>2 se	158.95L	Direct Discharge	201820 E01	Sageberry 20-4	2.0
ok	159.98R	Direct Discharge	201830G02	Sageberry 30-3	2.0
>2 se	159.98R	Direct Discharge	201831C01	Sageberry 31-4	2.0
	160.50RA	Direct Discharge	201734D01		
>2 se	160.68L	Direct Discharge	201832 E01	Sageberry 32-4	1.5
ok	161.60L	Direct Discharge	211805C01	Mary Welch 5-1	1.5
>2 se	161.60L	Direct Discharge	211809D02	Donaghy 9-1	2.5
>2 se	162.08L	Direct Discharge	211805M01	Mary Welch 5-2	3.5
ok	163.18R	Direct Discharge	211806G01	K-Farming 20	3.90
ok	162.64L	Direct Discharge	211808B01	RC Farming	3.0
>2 se	162.08L	Direct Discharge	211809L01	Donaghy 9-2	2.5
ok	163.18R	Direct Discharge	211807 E01	Richard/Alex Kochergen Well 11	9.8
ok	163.59L	Direct Discharge	211808Q01/N01	Mary Welch/EJD 8-1	1.0
	164.00R	Lateral 27R	211818G01		
ok	164.11R	Direct Discharge	211818G03	Kochergen Farms Composting	3.0
>2 se	164.55L-A	New well	211815M02	Westside Harvesting AUDRA	0.99
ok	164.55L-A	Direct Discharge	211817N03	Richard Scott 17-1	3.0
ok	164.55L-B	Direct Discharge	211822 E01/02	J & E Trust 22-1	3.3
>2 se	164.55L-A	Direct Discharge	211823 E01	Donaghy 23-2	1.5
ok	164.55L-A	New well	211823B02	Westside Harvesting AUDRA	0.99
>2 se	164.55L-A	Direct Discharge	211823D06/D07	Donaghy GTO FB Ryan 37L 23-1	3.0
>2 se	164.55LB	Direct Discharge	211816N01	Donaghy 16-3	4.5
>2 se	164.55LB	Direct Discharge	211816P01	Donaghy 16-2	3.0
ok	164.95R	Direct Discharge	211829 E01/E02	Dalena Farms D5	0.99
ok	164.95R	Direct Discharge	211833G01	Dalena Farms C3	2.0
ok	164.95R	Direct Discharge	211833N02	Dalena Farms C1	2.0
>2 se	166.90R	Direct Discharge	211827K02	Keenan 304/Culvert	2.5
ok	166.90R	New well	211828G06	Keenan KF1	0.99
	167.04L	Lateral 37	211919C03		
	167.84R	Direct Discharge	221804H01		
	169.21R	Direct Discharge	221803B01		
ok	169.48L	Direct Discharge	211835N02	Family Tree (David)	2.5
ok	169.48L	Direct Discharge	211835Q01/Q02	Family Tree (Andy)	2.5
	169.88L	Direct Discharge	221801 E01		
	171.50LA	Direct Discharge	221812R01		
	164.95R	Direct Discharge	various	Dalena Reservoir	6

Appendix C. Weekly Monitoring of WWD Lateral 7 by Reclamation

Reclamation will conduct a special monitoring program in the San Luis Canal while water is being pumped from WWD Lateral 7 into the canal. This will consist of weekly field measurements of salinity and turbidity, and collection of grab samples to measure selenium and other constituents.

This monitoring may be modified by Reclamation to change the frequency of measurements and the range of parameters. Reclamation will pay for the costs of sampling and analysis for this special monitoring program.

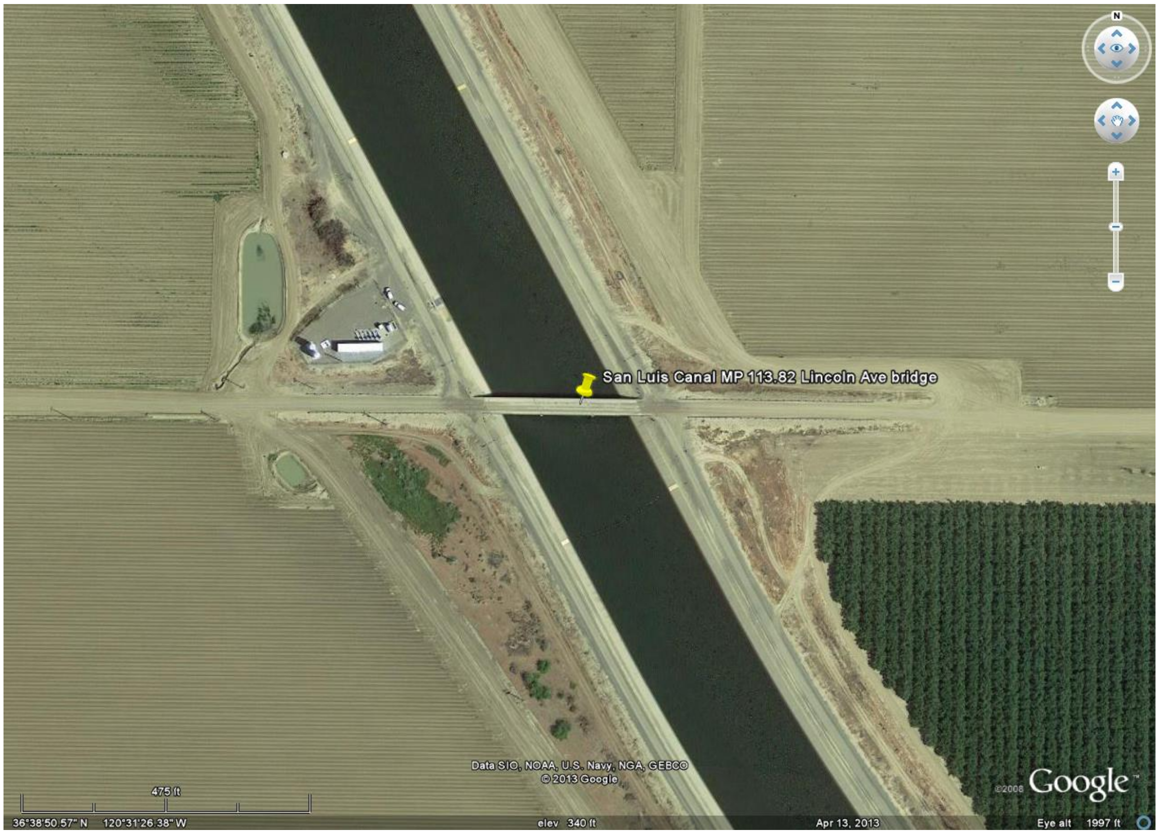
Location of Monitoring Sites

	Northing	Westing
San Luis Canal MP 113.82 Lincoln Ave bridge (upstream site)	36o38'50.72" N	120o31'26.37" W
WWD Lateral 7 at Adams Avenue	36o37'57.22" N	120o20'37.77" W
San Luis Canal MP 115.43L WWD Lateral 7 turnout structure	36o37’55.55” N	120o20’33.36” W
San Luis Canal MP 117.47 Manning Ave (downstream site)	36o36'43.68" N	120o29'22.54" W

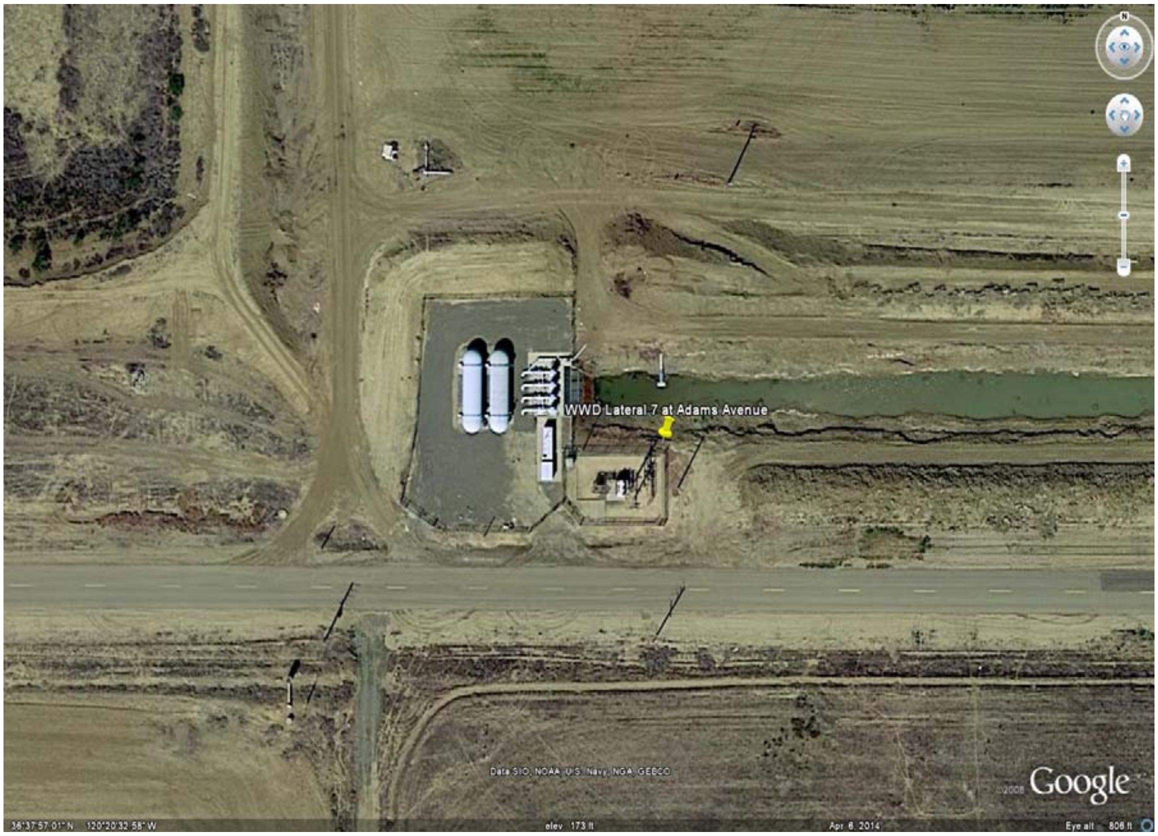
Constituents of Concern

Reclamation will collect samples of water from Lateral 7 at Adams Avenue that will be tested as follows:

- Weekly, for the first month for the Table 4 short list of constituents
- Weekly for the duration of the program for selenium and any other constituent of concern

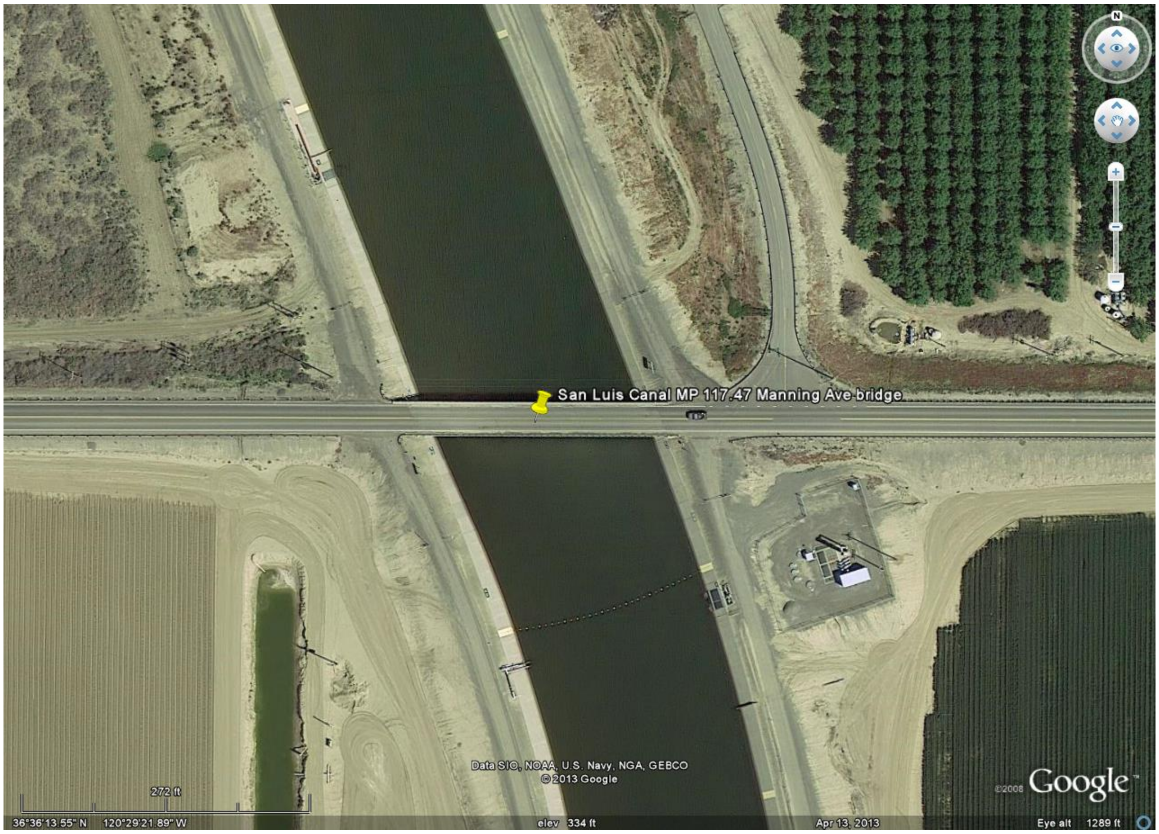


San Luis Canal Milepost 113.82 – Lincoln Ave bridge (upstream sampling site)



Westlands Water District Lateral 7 at Adams Avenue


San Luis Canal MP 115.43L WWD Lateral7 turnout



San Luis Canal Milepost 117.47 – Manning Avenue (downstream sampling site)

Maximum Allowable Changes in the San Luis Canal adjacent to Lateral 7

Constituent	San Luis Canal Monitoring Location	Maximum allowable
Daily Change in salinity (specific conductance)	Checks 13 – 21	Less than 50 µS/cm
	Lincoln – Manning	Less than 50 µs/cm
Maximum salinity (more than 5 consecutive days)	Check 21	600 µS/cm
	Manning	450 µS/cm
Daily change in turbidity	Checks 13 – 21	Less than 5 NTU
	Lincoln – Manning	Less than 5 NTU

Reclamation will direct the District to stop pumping water from Lateral 7 into the San Luis Canal if the constituents in the canal exceed the maximum allowable concentrations listed above.

Appendix D. Westlands WD Flow reports

WESTLANDS WATER DISTRICT
MONTHLY SCHEDULE

Agreement: SWPAO #14-010

To: Via Email
Chief, Water Deliveries Section
slwtrops@water.ca.gov
SWPDeliveries@water.ca.gov

cc: Via Email
Chief, Water Management Branch
Chief, Power Management and Optimization Branch
Water_deliv_sched@water.ca.gov

Chief, Day- Ahead Scheduling Section
Presched@water.ca.gov

Oct-14

POOL 15

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Cardella Fundus Farms	110.48	141225D01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	16
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 15 Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**3**	**3**	**3**	**16**

POOL 16

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
7L	115.43L		48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	100	100	100	100	100	100	100	100	100	100	48	48	2000
J Giacone & Son	117.51L	151419F01	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	74
J Giacone & Son	117.51L	151419Q01	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	148
Coburn Ranch	118.46R	151431D02	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	246
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 16 Total	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**63**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**63**	**63**	**2468**

POOL 17

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Sumner Peck Ranch, Inc.	124.18L	161412N02	11	11	0	0	0	0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	8	8	8	8	8	8	8	8	8	8	268
Sumner Peck Ranch, Inc.	125.99L	161518P04	9	0	0	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	262
Michael Gragnani	127.40L	161521L01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Michael Gragnani	127.40L	161521N03	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	167
Britz	128.49R	171413A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alexa Sophia Stephanopoulos	128.50L	161532A01	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	17	17	17	17	17	17	17	17	3	3	3	333
Alexa Sophia Stephanopoulos	128.50L	161533N03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	24
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 17 Total	**35**	**26**	**15**	**24**	**24**	**24**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**43**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**33**	**33**	**33**	**1054**

POOL 18

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
CMA General Partnership	133.80L	171614Q01	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	197
CMA General Partnership	137.31L	171623J01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CMA General Partnership	137.31L	171623M01	5	5	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	211
CMA General Partnership	137.83L	181606F01	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	197
CMA General Partnership	133.80L	171601N03	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 18 Total	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**703**

POOL 19

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
AFW	154.10L	191736A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFW	155.15L	191831N01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9
Sageberry Farms	152.75L	191723R01	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	108
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 19 Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**12**	**117**

POOL 20

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Woolf Family Trust	156.36R	201712H01	0	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	190
Woolf Family Trust	156.36R	201714K01	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	209
Sageberry Farms V	157.98 (temp)	201817G01	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	69
Sageberry Farms V	158.95L	201820E01	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Sageberry Farms IV	158.98R (temp)	201830G02	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Sageberry Farms III	158.98R (temp)	201831C01	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Sageberry Farms	160.68L	201832E01	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	74
Mary Welch Farms Inc.	161.60L	211805C01	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
Mary Welch Farms Inc.	162.08L	211805M01	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	148
Mary Welch Farms Inc.	163.59L	211808Q01	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	5	5	8	8	8	8	8	237
Donaghy GT FBO Megan	161.60L	211809D02	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	83
Donaghy GT FBO Megan	161.60L	211809L01	0	0	0	0	0	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	0	0	0	5	5	5	5	5	90
RC Farms	162.64L	211808B01	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	177
Alex A Kochergan Farms Inc	163.18R	211806G01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	31
Richard Scott Farms, Inc.#17-1	164.55LA	211817N03	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	138
Donaghy GT FBO Meghan	164.55LB	211816P01	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	41
Donaghy GT FBO Meghan	164.55LB	211816N01	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	0	0	0	7	7	7	7	7	189
Donaghy GT FBO Ryan	164.55LB	211823D06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	0	0	0	0	3	3	3	3	31
J&E 2003 Irr Trust	164.55LB	211822E01	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	148
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 20 Total	**53**	**66**	**66**	**66**	**66**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**71**	**71**	**73**	**73**	**73**	**73**	**73**	**73**	**73**	**73**	**57**	**57**	**57**	**78**	**81**	**81**	**81**	**81**	**2174**

POOL 21

Acct Name	Mile Marker	State ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Dalena Farms	164.95R	211829EO1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Dalena TLC	164.95R	211833N02	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Dalena TLC	164.95R	211833G01	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	98
Keenan Farms	166.90R	211827K02	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	95
Family Tree Farms	169.48L	211835Q02	3	3	3	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	0	0	0	0	0	0	0	3	3	3	3	3	3	44
Family Tree Farms	169.48L	211835N02	3	3	3	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	0	0	0	0	0	0	0	3	3	3	3	3	3	44
Mary Welch Farms Inc	167.04L	211919C03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pool 21 Total	**16**	**16**	**16**	**10**	**10**	**10**	**10**	**13**	**13**	**13**	**13**	**13**	**13**	**20**	**20**	**20**	**20**	**20**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**20**	**20**	**20**	**20**	**20**	**20**	**479**
		Daily Total	**190**	**195**	**183**	**186**	**186**	**189**	**200**	**204**	**207**	**207**	**207**	**207**	**207**	**215**	**215**	**217**	**217**	**217**	**211**	**264**	**272**	**269**	**269**	**252**	**252**	**259**	**283**	**286**	**279**	**227**	**236**	**7012**
		Monthly Total	**7012**																															

WESTLANDS WATER DISTRICT
Water Deliveries

Agreement: SWPAO #14-010

To: Via Email
Chief, Water Deliveries Section
slwtrops@water.ca.gov

cc: Via Email
Chief, Water Management Branch
Chief, Power Management and Optimization Branch
Water_deliv_sched@water.ca.gov

Chief, Day- Ahead Scheduling Section
Presched@water.ca.gov

2/1/2015

POOL 15 All values in AF

Acct Name	Mile Marker	State ID	Gross	Meter Coefficient	AF	NET AF
Cardella Fundus Farms	110.48	141225D01	81	1.00	81	69
Wayne Gowens Ranch	114.95L	151407E01	61	1.00	61	52
		Pool 15 Total	**142**		**142**	**121**

POOL 16

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
7L	115.43		798	0.90	763	646
J Giacone & Son	117.52L	151419Q01	177	1.00	177	150
		151419F01				
Coburn Ranch	118.46	151431D02	176	1.00	176	149
		Pool 16 Total	**1151**		**1116**	**945**

POOL 17

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
Sumner Peck Ranch, Inc.	124.18L	161412N02	0	1.00	0	0
Sumner Peck Ranch, Inc.	125.99L	161518P04	0	1.00	0	0
Michael Gragnani	127.40	161521L01	149	1.00	149	126
		161521N03				
Alexa Sophia Stephanopoulos	128.54L	161532A01	377	1.00	377	319
		161533J02				
Burford Ranch	130.81R	171510M01	146	1.00	146	124
		Pool 17 Total	**673**		**673**	**569**

POOL 18

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
CMA General Partnership	133.80L	171614Q01	220	1.00	220	186
CMA General Partnership	133.80L	171601N03				
CMA General Partnership	137.31L	171623J01	93	1.00	93	80
CMA General Partnership	137.31L	171623M01				
CMA General Partnership	137.83L	181606F01	112	0.86	96	81
		Pool 18 Total	**425**		**409**	**347**

POOL 19

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
Sageberry Farms	152.75L	191723R01	79	1.00	79	67
AFW	154.10L	191736A01	66	1.00	66	56
		Pool 19 Total	**145**		**145**	**123**

POOL 20

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
Woolf Family Trust	156.36R	201712H01	221	1.04	230	195
Woolf Family Trust	156.36R	201714K01				
Sageberry Farms V	157.98L	201817G01	0	1.05	0	0
Sageberry Farms V	158.95L	201820E01	0	1.00	0	0
Sageberry Farms IV	159.98R	201830G02	142	1.11	158	134
	159.98R	201831C01				
	159.98R	191723R01				
Sageberry Farms	160.68L	201832E01	5	1.00	5	4
Mary Welch Farms Inc.	161.60L	211805C01	97	1.03	100	85
	161.60L	211809D02				
Mary Welch Farms Inc.	162.08L	211805M01	106	1.00	106	89
K-Farming Co.	162.10R	211806G01	63	1.00	63	53
RC Farms	162.64L	211808B01	34	1.04	36	30
Alex A Kochergan Farms Inc	163.18R	211806G01	138	1.07	148	125
Mary Welch Farms Inc.	163.59L	211808Q01	231	1.00	231	196
Richard Scott Farms, Inc.#17-1	164.55LA	211817N03	98	1.00	98	82
Donaghy GT FBO Meghan	164.55LB	211816P01	316	1.00	316	268
		211816N01				
		211823E01				
		211822E01				
Kochergen Farms Composting	164.63R	211818G03	112	1.00	112	95
		Pool 20 Total	**1564**		**1602**	**1356**

POOL 21

Acct Name	Mile Marker	State ID	Gross	Meter Coeffecient	AF	NET AF
Dalena Farms	164.95R	211829E01	160	1.00	160	136
	164.95R	211833N02				
	164.95R	211833G01				
Keenan Farms	166.9L	211827K02	29	1.00	29	25
Family Tree Farms	169.48L	211835Q02	21	1.00	21	18
Family Tree Farms	169.48L	211835N02				
		Pool 21 Total	**210**		**210**	**179**

	Gross (AF)	Calibrated (AF)	NET (AF)
Monthly Total	**4309**	**4297**	**3640**

WESTLANDS WATER DISTRICT
WEEKLY SCHEDULE

Agreement: SWPAO #14-010

To: Via Email
Chief, Water Deliveries Section
slwtrops@water.ca.gov

cc: Via Email
Chief, Water Management Branch
Chief, Power Management and Optimization Branch
Water_deliv_sched@water.ca.gov
Chief, Day- Ahead Scheduling Section
Presched@water.ca.gov

Week			*Forecasted AF*	*Measured Flow [1] AF*
18-Jul	-	27-Jul	481	349
28-Jul	-	3-Aug	698	670
4-Aug	-	10-Aug	962	865
11-Aug	-	17-Aug	1,138	1,195
18-Aug	-	24-Aug	1,448	1,553
25-Aug	-	31-Aug	956	774
1-Sep	-	7-Sep	1,602	1,408
8-Sep	-	14-Sep	1,696	1,360
15-Sep	-	21-Sep	1,794	1,221
22-Sep	-	28-Sep	1,439	1,491
29-Sep	-	5-Oct	1,365	1,478
6-Oct	-	12-Oct	1,423	1,651
13-Oct	-	19-Oct	1,501	1,755
20-Oct	-	26-Oct	1,835	1,921
27-Oct	-	2-Nov	1,551	1,726
3-Nov	-	9-Nov	834	1,644
10-Nov	-	16-Nov	835	695
17-Nov	-	23-Nov	0	0
24-Nov	-	30-Nov	0	0
1-Dec		7-Dec	0	0
8-Dec	-	14-Dec	0	0
15-Dec	-	21-Dec	0	0
22-Dec	-	28-Dec	0	0
29-Dec	-	4-Jan	0	0
5-Jan	-	11-Jan	0	0
12-Jan	-	18-Jan	0	0
19-Jan	-	25-Jan	0	0
26-Jan	-	1-Feb	0	0
2-Feb	-	8-Feb	0	0
9-Feb	-	15-Feb	1,205	1,087
16-Feb	-	22-Feb	1,678	1,523
23-Feb	-	1-Mar	2,217	1,699
July-February Total Request			***26,657***	***26,065***

1. Total forecast represents gross pumping estimates from all wells. Monthly meter readings will reconcile the final quantities pumped into the aqueduct. The values shown do not account for reductions resulting from water quality mitigation or canal losses.

Appendix E - San Luis Canal Water Balance

2015 San Luis Canal Pump-in Program
Appendix D. Mass Balance

estimate

on/off	Milepost	Bank	Feature	State Well ID	Pumper Well Name	Pumper/Account Name	Depth to GW	cfs	Active flow (cfs)	EC of well (uS/cm)	Number of active pump-ins	Total pump-in flow (cfs)	FW EC of pump-in water	Cumulative EC of pump-in water	Instream EC
	70.85	X	CHECK 13					2500	2500						500
	70.91	L?	SLWD turnout 1 (Santa Nella)												
	89.70	L?	JPA (Dos Palos)												
	95.06	X	CHECK 14												500
	108.50	X	CHECK 15												500
1	110.48	R		141225D01		Cardella Fundus Farms		1.5	1.5	1300					
0	110.49	L		141322P01	Well D	Cardella Fundus Farms	423	1.7	0.0	1300					
1	114.95	L		151407 E01	7-1 #1 well	Wayne Gowens Ranch	462	1.1	1.10	1200					
1	115.43	L	Lateral 7 Reverse Flow		WWD7	Westlands Water District		13.7	13.7	1200					
0	117.52	L		151419F01	Well 19-1	J Giacone & Son	504	0.0	0.0	1300					
1	117.52	L		151419Q01	Well 19-2	J Giacone & Son	504	3.2	3.2	1200					
1	118.46	R		151431D02		Coburn Ranch	507	3.2	3.2	1100					
	122.07	X	CHECK 16								5	23	1192	1192	506
0	124.18	L		161412N02	Well #1 13	Sumner Peck Ranch, Inc.	458	3.00	0.0	1320					
0	125.99	L		161518P04	Well #2 18	Sumner Peck Ranch, Inc.	510	3.00	0.0	1450					
1	127.40	L		161521L01	3 North	Mike Gragnani	450	2.7	2.7	1500					
0	127.40	L		161521N03	3 South	Mike Gragnani	483	4.00	0.0	1500					
0	128.49	R		171413A01	Well 13-1	Alexa Sophia Stephanopoulos	590	3.8	0.0	1300					
0	128.50	L		161533J01/J02	33	Alexa Sophia Stephanopoulos	518	0.99	0.0	1300					
1	128.54	L		161532A01	32	Alexa Sophia Stephanopoulos	329	6.8	6.8	1300					
1	130.81	R		171510M01	SW10	Burford Ranch	489	0.8	0.8	1300					
	132.95	X	CHECK 17								3	10	1352	1242	510
0	133.80	L		171601N03	1SW	CMA General Partnership	339	7.0	0.0	1077					
1	133.80	L		171614Q01	14SE	CMA General Partnership	233	4.0	4.0	1000					
	134.79	R	Cantua Creek flume												
	136.00	R	Salt Creek inlet												
0	137.37	L		171623M01	23NW	CMA General Partnership	239	7.00	0.0	1100					
1	137.39	L		171623J01	23SE	CMA General Partnership	236	1.7	1.7	970					
1	137.83	L		181606F01	6NE	CMA General Partnership	475	1.7	1.7	1700					
	143.16	R	Coalinga Canal												
	143.23	X	CHECK 18								3	7	1157	1227	512
1	152.75	L		191723R01	23-2	Sageberry Farms	350	1.4	1.4	1420					
1	154.10	L		191736A01	Well 36-1	AFW	352	1.2	1.2	1420					
	155.64	X	CHECK 19								2	3	1420	1239	512
	156.34	R	WWD Lateral 23R (Huron)												
0	156.36	R		201714K01	Well 14-2N	Woolf Farming	367	0.99	0.0						
1	156.36	R		201712H01	Well 12-1	Woolf Farming	340	4.1	4.1	1390					
0	157.98	L		201817G01	17-3	Sageberry Farms V	382	3.7	0.0	1190					
	158.36	R	Arroyo Pasajero												
0	158.95	L		201820 E01	20-4	Sageberry Farms V	483	3.3	0.0	1170					
1	159.98	R		201830G02	30-3	Sageberry Farms IV	378	2.8	2.8	1160					
0	159.98	R		201831C01	31-4	Sageberry Farms III	553	3.2	0.0	1190					
0	160.50	RA		201734D01		Sageberry Farms	408	3.70	0.0						
1	161.60	L		211805C01	Well 5-1	Mary Welch Farms Inc.	365	1.8	1.8	1200					
0	161.60	L		211809D02	Well 9-1	Donaghy GT FBO Megan		0.0	0.0	1300					
1	162.08	L		211805M01	Well 5-2	Mary Welch Farms Inc.	351	1.9	1.9	1300					
1	162.10	R		211806G01	Well 20	K-Farming Co.	366	3.8	3.8	1100					
1	162.64	L		211808B01		RC Farms	373	0.6	0.6	800					
0	162.64	L		211809L01	Well 9-2	Donaghy GT FBO Megan	385	2.9	0.0	1100					
0	163.18	R		211807 E01	Well 11	Richard/Alex Kochergen Farms Inc	292	0.99	0.0						
1	163.59	L		211808Q01	Well 8-1	Mary Welch Farms Inc.	n/a	4.2	4.2	800					
1	164.55	L-A		211817N03	Well 17-1	Richard Scott Farms, Inc.#17-1	301	1.8	1.8	1300					
1	164.55	L-B		211816P01	Well 16-2	Donaghy GT FBO Meghan	323	5.7	5.7	1200					
0	164.55	L-A		211816N01	Well 16-3	Donaghy GT FBO Meghan	378	0.99	0.0	950					
0	164.55	L-A		211822 E01	Well 22-1	J & E 2003 Irr Trust	414	5.50	0.0	820					
0	164.55	L-A		211823D06	Well 23-1	Donaghy GTO FBO Ryan 37L	423	2.4	0.0	950					
1	164.63	R		211818G03		Kochergen Farms Composting	254	2.0	2.0	1320					
	164.69	X	CHECK 20								11	29	1165	1209	520
	164.79	R	WWD Lateral 28R (Avenal)												
0	164.95	R		211833G01	C-3 Well	Dalena TLC	304	2.0	0.0	1200					
0	164.95	R		211833N02	C-1 Well	Dalena TLC	423	2.0	0.0	870					
1	166.90	R		211827K02	Well 304/Culvert	Keenan Farms	233	0.5	0.5	1300					
1	169.48	L		211835Q01/Q02	Andy's 30th well	Family Tree Farms	322	0.4	0.4	980					
0	169.48	L		211835N02	Davids 30th Well	Family Tree Farms	221	3.1	0.0	870					
	172.40	X	CHECK 21								3	4	1017	1199	521
27									75.6		27	75.6			

2015 San Luis Canal Pump-in Program
Appendix D. Mass Balance

Summary	
Number of active wells	27
total flow from active wells	76
fw ec of the pump-in water	1199

	wells	pump-in cfs	well ec	cumulative EC
Check 13		2500		500
Check 14	0	0.0		500
Check 15	0	0.0		500
Check 16	5	22.7	1,192	506
Check 17	3	10.3	1,352	510
Check 18	3	7.4	1,157	512
Check 19	2	2.6	1,420	512
Check 20	11	28.9	1,165	520
Check 21	3	3.8	1,017	521
totals	27	75.6		
fw averages			1199	
change in EC caused by non-project water				21

Appendix D

Reclamation's Cultural Resources Determination

From: Richard Stevenson

Sent: Tuesday, January 20, 2014

To: Benjamin Lawrence

Subject: Westlands Water District Groundwater Warren Act

Ben,

I reviewed the proposed action whereby Westlands Water District has requested a Warren Act Contract to convey and store up to 30,000 acre-feet per year of groundwater in San Luis Canal and San Luis Reservoir. The Warren Act Contract would be for a period of five years, and the non-project groundwater would be introduced into the Canal between April 1 and August 31 during the contract period. The water would come from a combination of deep groundwater wells within Westlands, and groundwater purchased from water districts and private entities adjacent to the Mendota Pool who have existing Mendota Pool pump-in programs.

Water would be discharged to the Canal using existing pipes and laterals. Some licenses for existing pipes will need to be renewed, but no new discharge points would be installed. The location and type of each discharge point is shown in the attached spreadsheet.

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

Richard M. Stevenson
Deputy Regional Resources Manager

Appendix E

Reclamation's Indian Trust Assets Determination

CULTURAL RESOURCES COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch

MP-153 Tracking Number: 15-SCAO-060

Project Name: Westlands Water District Groundwater Warren Act

NEPA Document: EA-15-001

MP-153 Cultural Resources Reviewer: Joanne Goodsell jg

Date: January 12, 2015

At the request of Westlands Water District (Westlands), Reclamation proposes to approve a 5-Year Warren Act Contract to convey up to 30,000 acre-feet per year of groundwater into San Luis Canal and San Luis Reservoir. The groundwater would come from existing wells within Westlands and groundwater purchased from water districts and private entities adjacent to the Mendota Pool who have existing Mendota Pool pump-in programs. Water would be discharged into the San Luis Canal using existing pipes and laterals. The proposed action would require the renewal of some licenses for existing discharge pipes, but would require no new discharge point construction or installation.

Reclamation has determined that the proposed action would have no impacts to cultural resources and is an undertaking that has no potential to cause effects on historic properties pursuant to 36 CFR § 800.3(a)(1). At this time, Reclamation has no further obligations under Section 106 of the National Historic Preservation Act (54 U.S.C. § 300101 *et seq.*) related to the proposed action.

This document communicates the completion of the NHPA Section 106 review process for this undertaking. If there are any changes to the proposed action prior to implementation, additional Section 106 review would be required. Please retain a copy of this document with the administrative record for this action