CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2013-XXXX
NPDES NO. CA0085260

WASTE DISCHARGE REQUIREMENTS FOR THE IRONHOUSE SANITARY DISTRICT WATER RECYCLING FACILITY CONTRA COSTA COUNTY

The following Discharger is subject to waste discharge requirements (WDR's) set forth in this Order:

Table 1. Discharger Information

Discharger	Ironhouse Sanitary District
Name of Facility	Water Recycling Facility
Facility Address	450 Walnut Meadows Drive
	Oakley, CA 94561
	Contra Costa County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Tertiary Treated Effluent	38º 02' 40.75" N	121º 41' 40.21" W	San Joaquin River

Table 3. Administrative Information

This Order was adopted on:	<Adoption Date>
This Order shall become effective on:	<Effective Date>
This Order shall expire on:	<Expiration Date>
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	[Choose: 180 days prior to the Order expiration date OR <insert date>]
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	Major

I, **PAMELA C. CREEDON**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on the date indicated above.

_____
PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

Information describing the Ironhouse Sanitary District, Water Recycling Facility is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board), finds:

A. Legal Authorities. This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260).This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.

B. Background and Rationale for Requirements. The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through H are also incorporated into this Order.

C. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections IV.B, IV.C, and V.B are included to implement State law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

D. Monitoring and Reporting. 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged discharging, or who proposes to discharge waste within its region, or any citizen or domiciary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports*."

The Discharger owns and operates the Facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

E. Notification of Interested Parties. The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet.

F. Consideration of Public Comment. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED that Order R5-2008-0057 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

C. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.

D. The Discharger shall not allow pollutant-free wastewater to be discharged into the treatment or disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001 with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program, Attachment E.

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 4:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--
	lbs/day[1]	359	537	717	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	359	537	717	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	1.1	--	2.1	--	--
	lbs/day[1]	39.4	--	75.3	--	--
Nitrate Plus Nitrite (as N)	mg/L	10	--	--	--	--

[1] Based on a design average dry weather flow of 4.3 million gallons per day (MGD).

b. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall not be less than 85 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays.

d. **Temperature.** The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20°F.

e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
ii. 23 MPN/100 mL, more than once in any 30-day period; and
iii. 240 MPN/10 mL, at any time.

f. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:

i. **Average Monthly Effluent Limitation**

$$S_{AMEL} = \frac{C_{D\ AVG}}{0.079} + \frac{C_{C\ AVG}}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L.
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L.

ii. **Maximum Daily Effluent Limitation**

$$S_{MDEL} = \frac{C_{D\ MAX}}{0.16} + \frac{C_{C\ MAX}}{0.025} \leq 1.0$$

$C_{D\text{-}max}$ = maximum daily diazinon effluent concentration in µg/L.
$C_{C\text{-}max}$ = maximum daily chlorpyrifos effluent concentration in µg/L.

g. **Average Dry Weather Flow.** The average dry weather discharge flow shall not exceed 4.3 MGD, as a monthly average.

h. **Methylmercury**. The effluent calendar annual methylmercury load shall not exceed 0.030 grams, in accordance with the Delta Mercury Control Program.

i. **Electrical Conductivity.** The effluent electrical conductivity shall not exceed 1,505 µmhos/cm, as a monthly average.

2. Interim Effluent Limitations

The Discharger shall maintain compliance with the following interim effluent limitation at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program, Attachment E:

a. **Mercury, total. Effective immediately and until 30 December 2030**, the effluent calendar year annual total mercury load shall not exceed ~~0.2~~8.65 grams/year. This interim effluent limitation shall apply in lieu of the final effluent limitation for methylmercury (Section IV.A.1.h).

B. Land Discharge Specifications – Not Applicable

Land Discharge Specifications for the Facility are included in WDR Order R5-2013-0010.

C. Recycling Specifications – Not Applicable

Recycling Specifications for the Facility are included in WDR Order R5-2013-0010.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in the San Joaquin River:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen:**
   a. The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
9. **Pesticides:**
   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by U.S. EPA or the Executive Officer;

d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);

e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCLs) set forth in CCR, Title 22, division 4, chapter 15;

g. Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity:**

a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the MCLs specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

11. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

15. **Temperature.** The discharge shall not cause the following in the San Joaquin River:

a. The creation of a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the river channel at any point.

b. A surface water temperature rise greater than 4°F above the natural temperature of the receiving water at any time or place.

16. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. **Turbidity**

a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;

b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;

c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;

d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor

e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D.

2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:

   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.

   b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      - *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

      - *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

      - *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

      The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

   c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section

307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

   ii. Controls any pollutant limited in the Order.

   The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge ~~or sludge use or disposal~~ in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge ~~or sludge use or disposal~~, and adequate public notification within 24 hours to downstream water agencies or others whose contact is reasonably foreseeable with the non-complying discharge.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

   ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a

statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).

~~o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].~~

~~p.~~o. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

~~q.~~p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E.

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this

permit may be reopened and modified in accordance with the new or amended standards.

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. **Mercury.** The Basin Plan's Delta Mercury Control Program was designed to proceed in two phases. After Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers modification to the Delta Mercury Control Program. This Order may be reopened to address changes to the Delta Mercury Control Program.

d. **Pollution Prevention.** This Order requires the Discharger update and implement a pollution prevention plan following Water Code section 13263.3(d)(3) for mercury. Based on a review of the pollution prevention plan, this Order may be reopened for addition and/or modification of effluent limitations and requirements for mercury.

e. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

f. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

g. **Regional Monitoring Program.** The Central Valley Water Board is developing a Regional Monitoring Program for the Sacramento-San Joaquin Delta. This Order may be reopened to modify the monitoring requirements to implement the Regional Monitoring Program.

h. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board will consider adoption of the Drinking Water Policy at a future meeting. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

i. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide an implementation plan for NPDES-permitted domestic wastewater dischargers. This Order may be reopened

to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established in this Provision, the Discharger is required to initiate a TRE in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Accelerated Monitoring and TRE Initiation**. When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

ii. **Numeric Toxicity Monitoring Trigger**. The numeric toxicity monitoring trigger to initiate a TRE is > 16 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iii. **Accelerated Monitoring Specifications**. If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

b. **Phase 1 Methylmercury Control Study** – In accordance with the Basin Plan's Delta Mercury Control Program and the compliance schedule included in this Order for methylmercury (Section VI.C.7.a), the Discharger shall participate in the Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study (Study) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve the methylmercury waste load allocation. A work plan was submitted by CVCWA on 20 April 2013. The study work plan will be reviewed by a Technical Advisory Committee (TAC) and approved by the Executive Officer. The work plan shall be implemented immediately after approval by the Executive Officer, and a progress report shall be submitted by **20 October 2015.**

The Study shall evaluate the feasibility of reducing sources more than the minimum amount needed to achieve the methylmercury allocation. The Study also may include an evaluation of innovative actions, watershed approaches, offsets projects, and other short and long-term actions that result in reducing inorganic (total) mercury and methylmercury to address the accumulation of methylmercury in fish tissue and to reduce methylmercury exposure. The Study may evaluate the effectiveness of using inorganic (total) mercury controls to control methylmercury discharges.

The Study shall include a description of methylmercury and/or inorganic (total) mercury management practices identified in Phase 1; an evaluation of the effectiveness, costs, potential environmental effects, and overall feasibility of the control actions. The Study shall also include proposed implementation plans and schedules to comply with methylmercury allocations as soon as possible. The Study shall be submitted to the Central Valley Water Board by **20 October 2018.**

The Executive Officer may, after public notice, extend the due date up to 2 years if the Discharger demonstrates it is making significant progress towards developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for Mercury.** The Discharger shall continue to implement its 20 October 2008 PPP for mercury. Annual progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E section X.D.1.). The progress reports shall discuss the effectiveness of the PPP in

the reduction of mercury in the discharge, include a summary of mercury and methylmercury monitoring results, and discuss updates to the PPP.

b. **Mercury Exposure Reduction Program**. The Discharger shall participate in a Mercury Exposure Reduction Program (MERP) in accordance with the Basin Plan's Delta Mercury Control Program. By letter dated 2 May 2013, ~~T~~the Discharger elected to provide financial support in a collective MERP ~~, either individually or collectively~~ with other Delta dischargers, rather than be individually responsible for any MERP activities. ~~shall submit an exposure reduction work plan for Executive Officer approval by **20 October 2013**.~~ An exposure reduction work plan for Executive Officer approval was submitted on 20 October 2013. The objective of the Exposure Reduction Program is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the Exposure Reduction Program objective, elements, and the Discharger's coordination with other stakeholders. The minimum requirements for the exposure reduction work plan are outlined in the Fact Sheet (Attachment F section VII.B.3.b). The Discharger shall integrate or, at minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. The Discharger shall continue to participate in the group effort to implement the work plan ~~**within 6 months of Executive Officer approval**~~.

c. **Pollution Prevention Plan for Salinity.** The Discharger shall continue implementation of its 20 October 2008 pollution prevention plan for salinity and annual progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.) The progress reports shall discuss the effectiveness of the PPP in the reduction of salinity in the discharge, include a summary of salinity constituent monitoring results, and discuss updates to the PPP.

4. Construction, Operation and Maintenance Specifications

a. **Ultraviolet (UV) Disinfection System Operating Specifications.** The Discharger shall operate the UV disinfection system to provide a minimum hourly UV dose per channel of 80 millijoules per square centimeter (mJ/cm^2) at peak daily flow, and shall meet the following operating specifications while discharging to the San Joaquin River.

i. The Discharger shall provide continuous, reliable monitoring of flow, UV transmittance, UV power, and turbidity.

ii. The Discharger shall operate the treatment system to insure that turbidity prior to disinfection shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period, and 0.5 NTU, at any time.

iii. The UV transmittance (at 254 nanometers) in the wastewater exiting the UV disinfection system shall not fall below 55 percent of maximum at any time.

iv. The quartz sleeves and cleaning system components must be visually inspected per the manufacturer's operations manual for physical wear (scoring, solarization, seal leaks, cleaning fluid levels, etc.) and to check the efficacy of the cleaning system.

v. The lamp sleeves must be cleaned periodically as necessary to meet the requirements.

vi. Lamps must be replaced per the manufacturer's operations manual, or sooner, if there are indications the lamps are failing to provide adequate disinfection. Lamp age and lamp replacement records must be maintained.

vii. The Facility must be operated in accordance with an operations and maintenance program that assures adequate disinfection.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Collection System.** The Discharger's collection system is part of the system that is subject to this Order. As such, the Discharger must properly operate and maintain its collection system (40 CFR § 122.41(e)). The Discharger must report any non-compliance (40 CFR § 122.41(l)(6) and (7)) and mitigate any discharge from the collection system in violation of this Order (40 CFR § 122.41(d)). See the Order at Standard Provision VI.A.2.c and Attachment D, subsections I.D, V.E, V.H, and I.C.

6. Other Special Provisions

a. When discharging to the San Joaquin River, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DPH reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

7. Compliance Schedules

a. **Compliance Schedule for Final Effluent Limitations for Methylmercury.** This Order requires compliance with the final effluent limitations for methylmercury by **31 December 2030.** The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations:

Task	Date Due
Phase 1	
i. Submit CVCWA Coordinated Methylmercury Control Study Work Plan	**Submitted**
ii. Implement Pollution Prevention Plan (PPP)[1] for Mercury (per Section VI.C.3.a)	**Submitted**
~~iii. Submit Mercury Exposure Reduction Work Plan (per Section VI.C.3.b)~~	~~**20 October 2013**~~
iii~~v~~. Implement CVCWA Coordinated Methylmercury Control Study Work Plan	**Immediately following Executive Officer Approval**
~~v. Implement Mercury Exposure Reduction Work Plan (per Section VI.C.3.b)~~	~~**6 months following Executive Officer Approval**~~
iv~~i~~. Annual Progress Reports[2]	**30 January, annually** ~~**20 October 2014**~~ ~~**20 October 2015**~~ ~~**20 October 2016**~~ ~~**20 October 2017**~~
v~~ii~~. Submit CVCWA Coordinated Methylmercury Control Study Progress Report	**20 October 2015**
vi~~ii~~. Submit Final CVCWA Coordinated Methylmercury Control Study	**20 October 2018**[3]

Task	Date Due
Phase 2	
vii~~x~~. Implement methylmercury control programs	**TBD**[4]
viii~~x~~. Full Compliance	**31 December 2030**[3]

[1] The PPP for Mercury shall be implemented in accordance with Section VI.C.3.a.

[2] Beginning 30 January 2015, and annually thereafter until the Facility achieves compliance with the final effluent limitations for methylmercury, the Discharger shall submit annual progress reports on pollution minimization activities implemented and evaluation of their effectiveness, including a summary of total mercury and methylmercury monitoring results.~~The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, sources of funding, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.~~

[3] The Executive Officer may, after public notice, extend the due date for the Final CVCWA Coordinated Methylmercury Control Study up to 2 years if the Discharger demonstrates it is making significant progress towards developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

[4] To be determined. Following Phase 1 the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations, final compliance date, etc. Consequently, the start of Phase 2 and the final compliance date is uncertain at the time this Order was adopted.

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Sections IV.A.1 and IV.A.1.b). Compliance with the final effluent limitations for BOD_5 and TSS required in Limitations and Discharge Requirements section IV.A.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements IV.A.1.b for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Total Mercury Mass Loading Effluent Limitations (Section IV.A.2.a). The procedures for calculating mass loadings are as follows:

1. The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow. All effluent monitoring data collected under the monitoring and reporting program, pretreatment program, and any special studies shall be used for these calculations. The total annual mass loading shall be the sum of the individual calendar months.

2. In calculating compliance, the Discharger shall count all non-detect measures at one-half of the detection level. If compliance with the effluent limitation is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.

C. Average Dry Weather Flow Effluent Limitations (Section IV.A.1.g). The average dry weather discharge flow represents the ~~daily~~ monthly average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow

effluent limitations will be determined annually based on the average ~~daily~~ monthly flow over three consecutive dry weather months (e.g., July, August, and September).

D. Total Coliform Organisms Effluent Limitations (Section IV.A.1.e). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance.

E. Mass Effluent Limitations. The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a are based on the permitted average dry weather flow and calculated as follows:.

Mass (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34 (conversion factor)

If the effluent flow exceeds the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.a shall not apply. If the effluent flow is below the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations do apply.

F. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).
2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:
   a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or
   b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).
3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
   a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall not be deemed out of compliance.

G. Chlorpyrifos and Diazinon Effluent Limitations (Section IV.A.1.f). Compliance shall be determined by calculating the sum (S), as provided in this Order, with analytical results that are reported as “non - detectable” concentrations to be considered to be zero.

H. Temperature Effluent Limitation (Section IV.A.1.d). Compliance with the final effluent limitations for temperature shall be ascertained using the daily average effluent temperature at monitoring location EFF-001 and the daily average temperature of the receiving water measured on the same day at RSW-002.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the

dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the state that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the n/2 and n/2+1).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in in 40 CFR part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless

clear environmental benefits of such an approach are identified to the satisfaction of the State Water Resources Control Board (State Water Board) or Central Valley Water Board.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Central Valley Water Board Basin Plan.

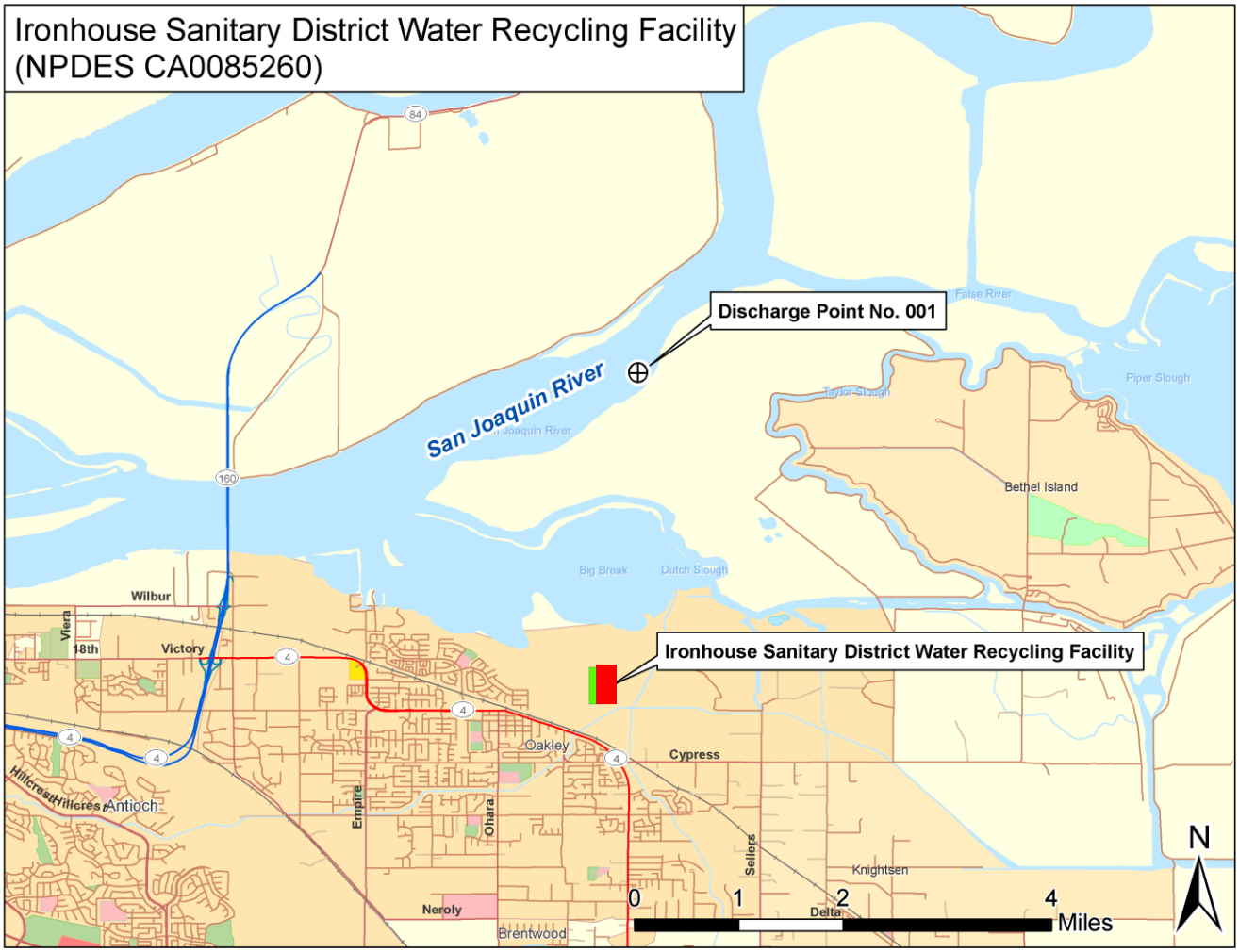
Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

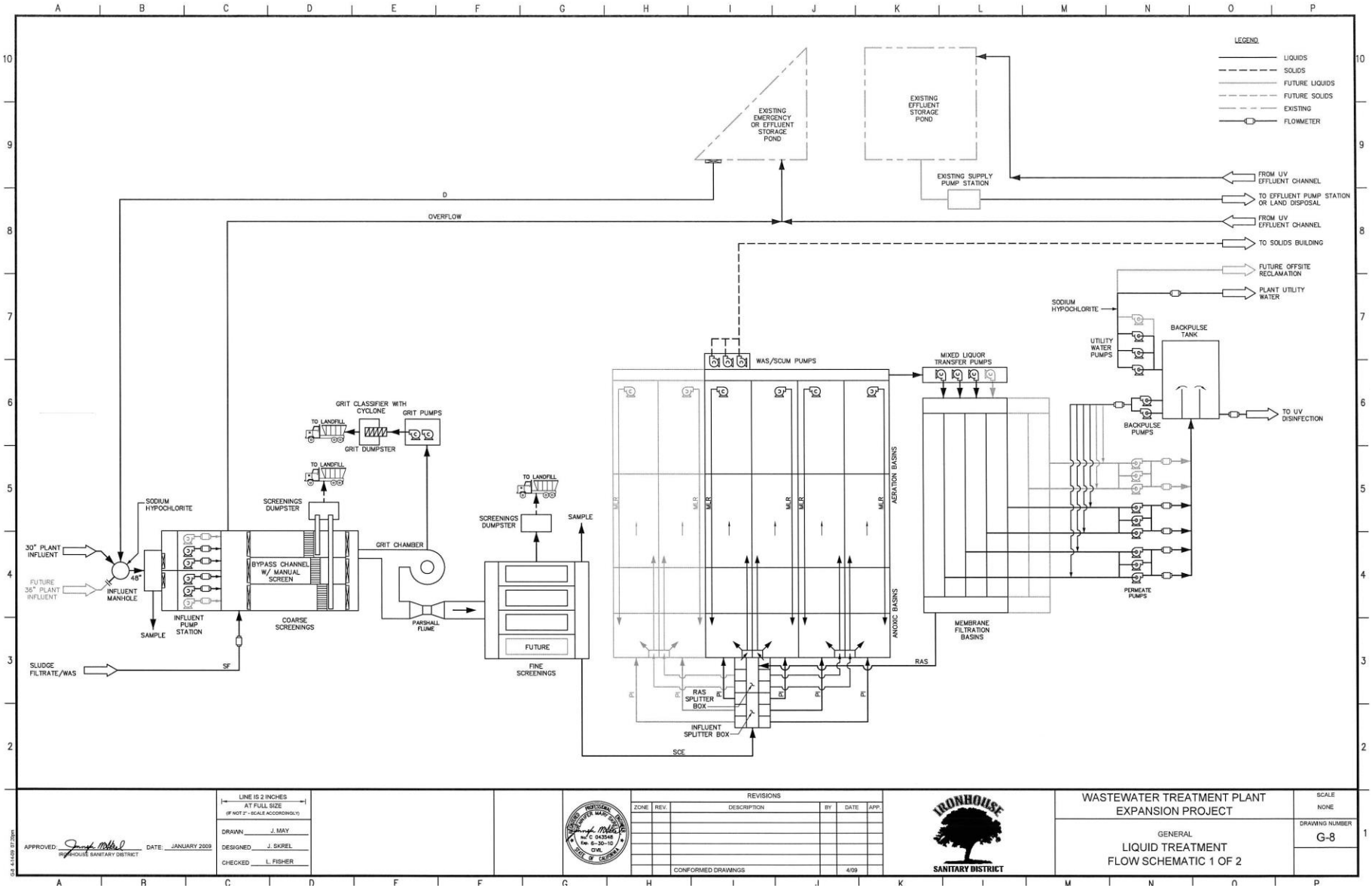
where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

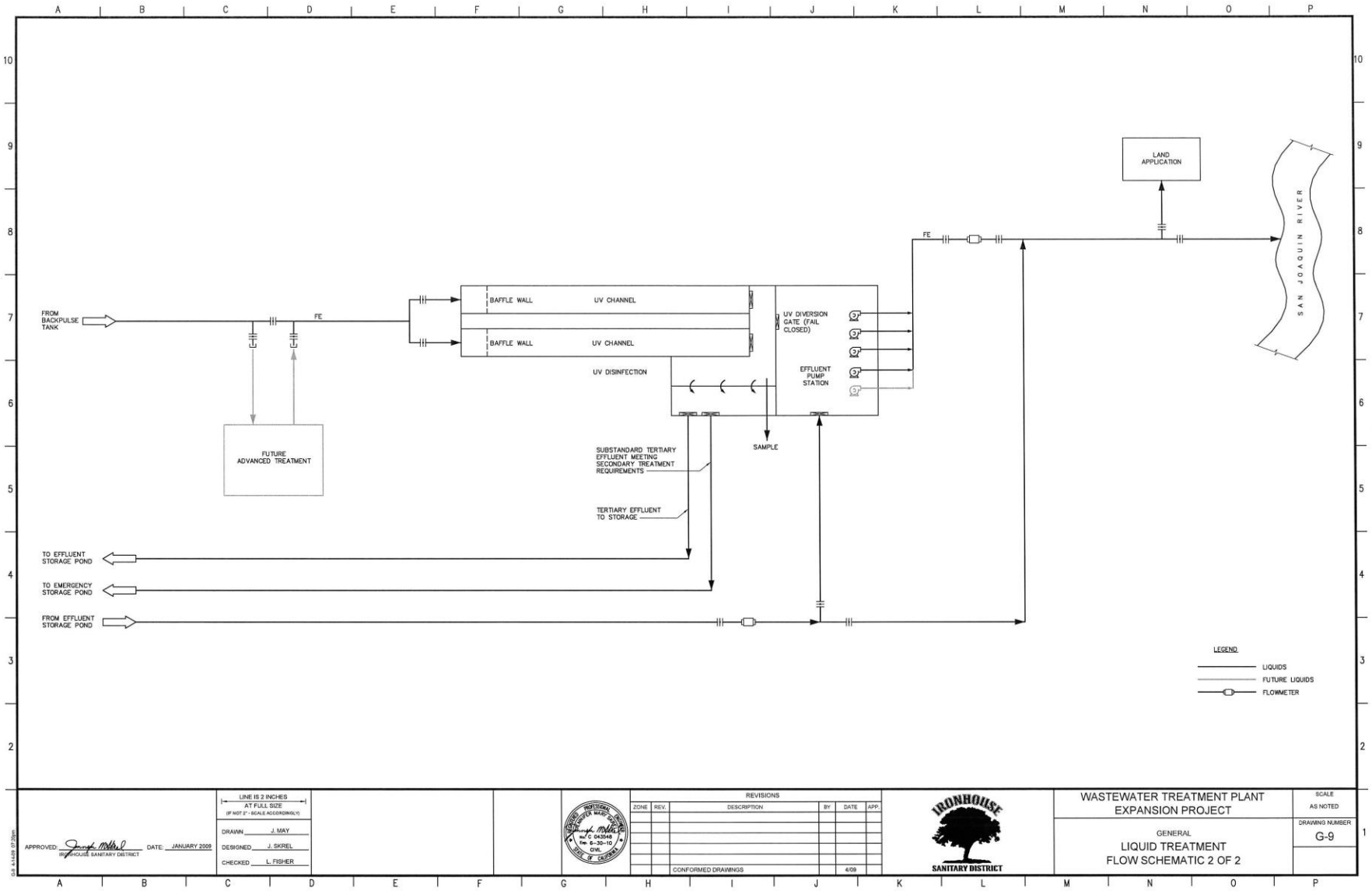
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

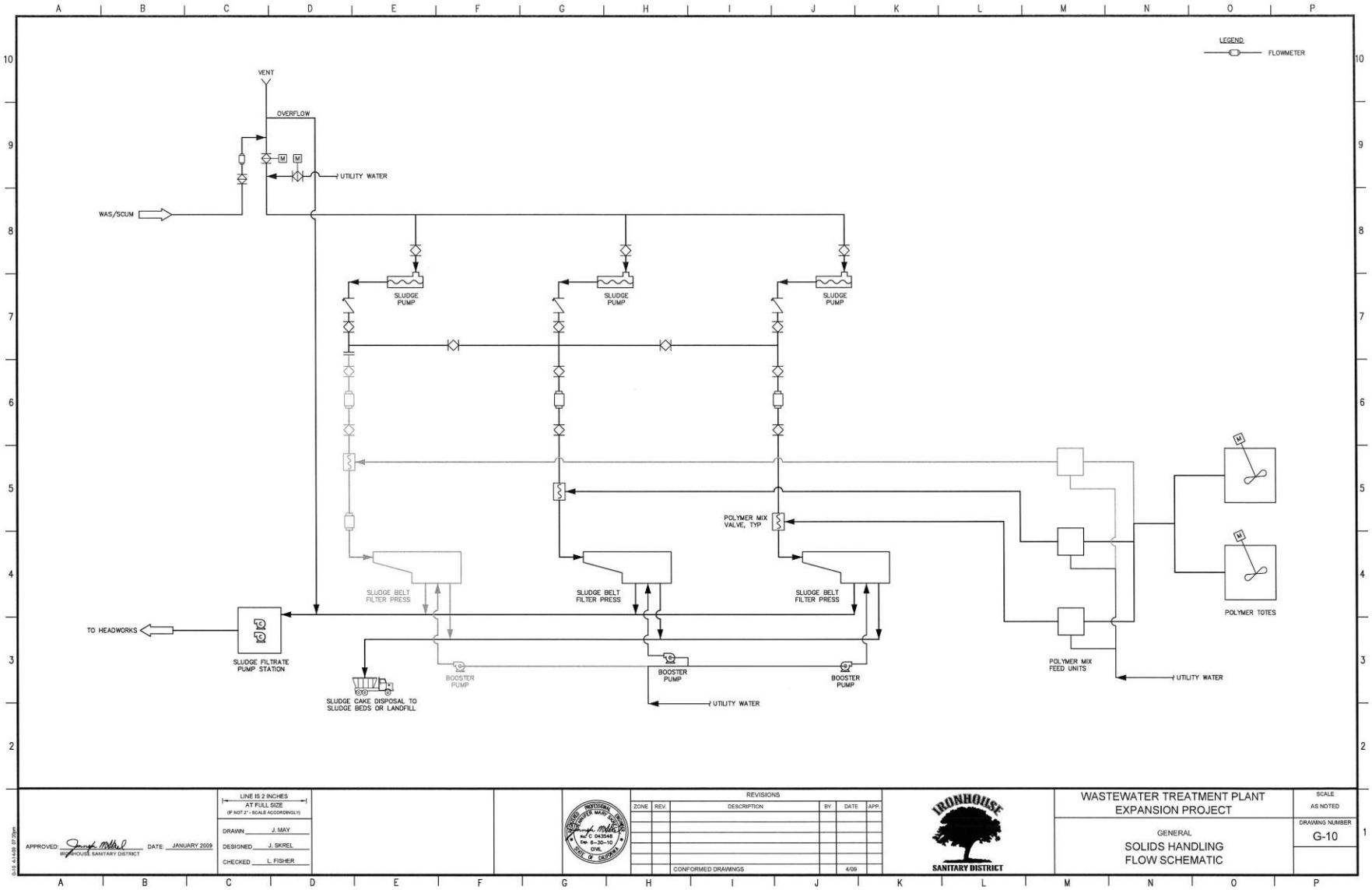
ATTACHMENT B – MAP



ATTACHMENT C – FLOW SCHEMATIC




FROM BACKPULSE TANK
FE
BAFFLE WALL
UV CHANNEL
BAFFLE WALL
UV CHANNEL
UV DISINFECTION
UV DIVERSION GATE (FAIL CLOSED)
EFFLUENT PUMP STATION
SAMPLE
FUTURE ADVANCED TREATMENT
SUBSTANDARD TERTIARY EFFLUENT MEETING SECONDARY TREATMENT REQUIREMENTS
TERTIARY EFFLUENT TO STORAGE
TO EFFLUENT STORAGE POND
TO EMERGENCY STORAGE POND
FROM EFFLUENT STORAGE POND
FE
LAND APPLICATION
SAN JOAQUIN RIVER
LEGEND
LIQUIDS
FUTURE LIQUIDS
FLOWMETER
APPROVED: IRONHOUSE SANITARY DISTRICT
DATE: JANUARY 2009
LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)
DRAWN J. MAY
DESIGNED J. SKREL
CHECKED L. FISHER
REVISIONS
ZONE REV. DESCRIPTION BY DATE APP.
CONFORMED DRAWINGS 4/09
IRONHOUSE SANITARY DISTRICT
WASTEWATER TREATMENT PLANT EXPANSION PROJECT
GENERAL
LIQUID TREATMENT FLOW SCHEMATIC 2 OF 2
SCALE AS NOTED
DRAWING NUMBER G-9


LEGEND:
FLOWMETER
VENT
OVERFLOW
UTILITY WATER
WAS/SCUM
SLUDGE PUMP
SLUDGE PUMP
SLUDGE PUMP
POLYMER MIX VALVE, TYP
SLUDGE BELT FILTER PRESS
SLUDGE BELT FILTER PRESS
SLUDGE BELT FILTER PRESS
POLYMER TOTES
TO HEADWORKS
SLUDGE FILTRATE PUMP STATION
BOOSTER PUMP
BOOSTER PUMP
BOOSTER PUMP
SLUDGE CAKE DISPOSAL TO SLUDGE BEDS OR LANDFILL
UTILITY WATER
POLYMER MIX FEED UNITS
UTILITY WATER
APPROVED: IRONHOUSE SANITARY DISTRICT
DATE: JANUARY 2009
LINE IS 2 INCHES AT FULL SIZE
DRAWN J. MAY
DESIGNED J. SKREL
CHECKED L. FISHER
REVISIONS
ZONE REV. DESCRIPTION BY DATE APP.
CONFORMED DRAWINGS 4/09
IRONHOUSE SANITARY DISTRICT
WASTEWATER TREATMENT PLANT EXPANSION PROJECT
GENERAL
SOLIDS HANDLING FLOW SCHEMATIC
SCALE AS NOTED
DRAWING NUMBER G-10

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Central Valley Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR § 122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR § 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR § 122.41(i)(4).)

G. Bypass

1. Definitions
   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR § 122.41(m)(1)(i).)
   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR § 122.41(m)(1)(ii).)
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR § 122.41(m)(2).)
3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR § 122.41(m)(4)(i)):
   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR § 122.41(m)(4)(i)(A));
   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR § 122.41(m)(4)(i)(B)); and
   c. The Discharger submitted notice to the Central Valley Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR § 122.41(m)(4)(i)(C).)
4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR § 122.41(m)(4)(ii).)
5. Notice
   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR § 122.41(n)(2).)
2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR § 122.41(n)(3)):
   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR § 122.41(n)(3)(i));
   b. The permitted facility was, at the time, being properly operated (40 CFR § 122.41(n)(3)(ii));
   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR § 122.41(n)(3)(iii)); and
   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR § 122.41(n)(3)(iv).)
3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other

requirements as may be necessary under the CWA and the Water Code. (40 CFR § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under 40 CFR part 136 or, in the case of sludge use or disposal, approved under 40 CFR part 136 unless otherwise specified in 40 CFR part 503 unless other test procedures have been specified in this Order. (40 CFR § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Valley Water Board Executive Officer at any time. (40 CFR § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 CFR § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 CFR § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 CFR § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 CFR § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 CFR § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 CFR § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Valley Water Board, State Water Board, or U.S. EPA within a reasonable time, any information which the Central Valley Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Valley Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 CFR § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with

Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 CFR § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Central Valley Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR § 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR § 122.22(b)(2)); and

   c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 CFR § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Valley Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR § 122.41(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley Water Board. (40 CFR § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR § 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(A).)

   b. Any upset that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(B).)

3. The Central Valley Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Central Valley Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application

process or not reported pursuant to an approved land application plan. (40 CFR§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 CFR § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Central Valley Water Board**,** State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 CFR § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

G. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Central Valley Water Board of the following (40 CFR § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR § 122.42(b)(1)); and
2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 CFR § 122.42(b)(2).)
3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 CFR § 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.

B. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.

D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

F. Laboratories analyzing monitoring samples shall be certified by the DPH, in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

G. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

H. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

I. The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	A location where a representative sample of the influent into the Facility can be collected prior to entering the treatment process.
001	EFF-001	Location where a representative sample of the facility's effluent can be obtained prior to discharge into the receiving water Latitude: 38° 00' 08.162" Longitude: -121° 42' 06.893"
--	RSW-001	In the San Joaquin River, approximately 7 miles upstream of Discharge Point 001
--	RSW-002	In the San Joaquin River, at Jersey Point, USBR Monitoring Location JER Latitude 38.053ºN, Longitude 121.688ºW
--	SPL-001	A location where a representative sample of the municipal water supply can be obtained.
--	FIL-001	Monitoring of the filter effluent to be measured immediately downstream of the filters prior to the UV disinfection system
--	UVS-001	A location where a representative sample of wastewater can be collected immediately downstream of the ultraviolet light (UV) disinfection system.

The North latitude and West longitude information in Table E-1 are approximate for administrative purposes.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the Facility at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
Non-Conventional Pollutants				

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Electrical Conductivity @ 25ºC	µmhos/ cm	Grab[3]	1/Week	[2]

[1] 24-hour flow proportional composite.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; or by methods approved by the Central Valley Water Board or the State Water Board.
[3] Grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. When discharging to the San Joaquin River, the Discharger shall monitor treated wastewater at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow to San Joaquin River	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20 C)	mg/L	24-hr Composite[1]	2/Week	[2]
	lbs/day	Calculate	2/Week	--
pH	standard units	Meter	Continuous[3]	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	2/Week	[2]
	lbs/day	Calculate	2/Week	--
Priority Pollutants				
Mercury, Total Recoverable	ng/L	Grab	1/Month	[2,4,5]
Priority Pollutants and Other Constituents of Concern	See Attachment H	See Attachment H	See Attachment H	[2,5]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week [3]	[2]
	lbs/day	Grab	1/Week	--
Chlorine, Total Residual	mg/L	Grab	1/Day	[2,6]
Diazinon	mg/L	Grab	1/Year	[2]
Chlorpyrifos	mg/L	Grab	1/Year	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	[2]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Mercury, Methyl	ng/L	Grab	1/Month	[2,4]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month	[2]
Nitrate Plus Nitrite (as N)	mg/L	Grab	1/Month	[2]
Temperature	°C	Meter	Continuous [3]	[2]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] 24-hour flow proportional composite.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[3] pH and temperature shall be recorded at the time of ammonia sample collection.

[4] Unfiltered methyl mercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in U.S. EPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by U.S. EPA method 1630/1631 (Revision E) with a method detection limit of 0.02 ng/L for methyl mercury and 0.2 ng/L for total mercury.

[5] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (See Attachment H, Table H-1).

[6] Monitoring for total chlorine residual only required when cleaning MBR filters. Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

[7]

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – When discharging to the San Joaquin River, the Discharger shall perform monthly acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent Monitoring Location EFF-001.

3. *Test Species* – Test species shall be rainbow trout (*Oncorhynchus mykiss*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency –* When discharging to the San Joaquin River, the Discharger shall perform quarterly three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA/821-R-02-013, October 2002.

6. *Reference Toxicant* – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. Laboratory water control shall be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Control	
	100	**25**	**12.5**	**6.25**	**3.125**		
% Effluent	100	25	12.5	6.25	3.125	0	
% Control Water	0	75	87.5	93.75	96.875	100	

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI.2.a.iii. of the Order.)

C. WET Testing Notification Requirements. The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following completion of the test, and shall contain, at minimum:

a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

b. The statistical methods used to calculate endpoints;

c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

d. The dates of sample collection and initiation of each toxicity test; and

e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan, or as amended by the Discharger's TRE Action Plan.

4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Location RSW-001

1. The Discharger shall monitor the San Joaquin River at Monitoring Location RSW-001 as follows:

Table E-5. Receiving Water Monitoring Requirements – Monitoring Location RSW-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants and Other Constituents of Concern	µg/L	See Attachment H	See Attachment H	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

B. Monitoring Location RSW-002

1. The Discharger shall monitor the San Joaquin River at Monitoring Location RSW-002 as follows:

Table E-6. Receiving Water Monitoring Requirements – Monitoring Location RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Temperature	ºF (ºC)	Grab or Meter	1/Month[1,2]	

[1] The Discharger may report results obtained from U.S. Bureau of Reclamation Station JER to satisfy this monitoring requirement.
[2] Report daily average temperature.

IX. OTHER MONITORING REQUIREMENTS

A. Municipal Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the municipal water supply at Monitoring Location SPL-001 as follows.

Table E-7. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Dissolved Solids[1]	mg/L	Grab	1/year	[2]
Electrical Conductivity @ 25°C[1]	µmhos/cm	Grab	1/year	[2]
Standard Minerals[3]	mg/L	Grab	1/year	[2]

[1] If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[3] Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

B. Filtration System and Ultraviolet Light (UV) Disinfection System

1. Monitoring Locations UVS-001 and FIL-001

When discharging to the San Joaquin River, the Discharger shall monitor the filtration system and UV disinfection system at Monitoring Locations FIL-001 and UVS-001 as follows:

Table E-8. Ultraviolet Light Disinfection System Monitoring Requirements

Parameter	Units	Sample Type	Sampling Location	Minimum Sampling Frequency
Flow	MGD	Meter	UVS-001	Continuous [1]
Turbidity	NTU	Meter	FIL-001	Continuous [1, 2]
Number of UV banks in operation	Number	Observation	N/A	Continuous [1]
UV Transmittance	Percent (%)	Meter	UVS-001	Continuous [1]
UV Dose [3]	~~MW-sec~~mJ/cm^2	Calculated	N/A	Continuous [1]
Total Coliform Organisms	MPN/100 mL	Grab	UVS-001	2/Week

[1] For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation. If analyzer(s) fail to provide continuous monitoring for more than two hours and influent and/or effluent from the disinfection process is not diverted for retreatment, the Discharger shall obtain and report hourly manual and/or grab sample results. The Discharger shall not decrease power settings or reduce the number of UV lamp banks in operation while the continuous analyzers are out of service and water is being disinfected.

[2] Report daily average and maximum turbidity for each day.
[3] Report daily minimum UV dose and daily average UV dose. The minimum hourly average dose shall consist of lowest hourly average dose provided in any channel that had at least one bank of lamps operating during the hour interval. For channels that did not operate for the entire hour interval, the dose will be averaged based on the actual operation time..

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self-Monitoring Reports (SMR's)

1. The Discharger shall electronically submit SMR's using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly, quarterly, and annual SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-9. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	Submit with monthly SMR

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
2/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
1/Year	Permit effective date	1 January through 31 December	1 February of following year

4. **Reporting Protocols**. The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current laboratory's Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

   d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Multiple Sample Data**. When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall

compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

6. The Discharger shall submit SMR's in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDR's; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

7. The Discharger shall submit in the SMR's calculations and reports in accordance with the following requirements:

a. **Mass Loading Limitations**. For BOD_5, TSS, and ammonia, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be calculated as follows:

Mass Loading (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34

When calculating daily mass loading, the daily average flow and constituent concentration shall be used. For weekly average mass loading, the weekly average flow and constituent concentration shall be used. For monthly average mass loading, the monthly average flow and constituent concentration shall be used.

b. **Removal Efficiency (BOD_5 and TSS).** The Discharger shall calculate and report the percent removal of BOD_5 and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.

c. **Total Coliform Organisms Effluent Limitations**. The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7 day median of total coliform organisms shall be calculated as specified in Section VII.D of the Limitations and Discharge Requirements.

d. **Chlorpyrifos and Diazinon Effluent Limitations (Section IV.A.1.f).** The Discharger shall calculate and report the value of S_{AMEL} and S_{MDEL} for the effluent,

using the equation in Effluent Limitations IV.A.1.f and consistent with the Compliance Determination Language in Section VII.G.

C. Discharge Monitoring Reports (DMR's)

1. At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit DMR's. Until such notification is given specifically for the submittal of DMR's, the Discharger shall submit DMR's in accordance with the requirements described below.

2. DMR's must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official U.S. EPA pre-printed DMR forms (EPA Form 3320-1) or on self-generated forms that follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. **Special Study Reports and Progress Reports**. As specified in the compliance time schedules required in the Special Provisions contained in section VI of the Order, special study and progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Table E-10. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Salinity Evaluation and Minimization Plan (Special Provision VI.C.3.c)	**Within 9 months** after adoption of this Order
Pollution Prevention Plan for Mercury and Compliance Schedule for Methylmercury, Progress Reports (Special Provisions VI.C.3.a. and VI.C.7.a.)	30 January, annually ~~20 October 2014~~ ~~20 October 2015~~ ~~20 October 2016~~ ~~20 October 2017~~
Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study Progress Report (Special Provision VI.C.7.a)	20 October 2015

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, required by Special Provisions – VI.C.2. The Discharger shall report the progress in satisfaction of compliance schedule dates specified in Special Provisions – VI.C.7. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

3. **Within 60 days of permit adoption**, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table H-1 (Attachment H) provides required maximum reporting levels in accordance with the SIP.

4. **Annual Operations Report**. By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

   b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

   c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

   e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section I, the Central Valley Water Board incorporates this Fact Sheet as findings of the Central Valley Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5B070105005
Discharger	Ironhouse Sanitary District
Name of Facility	Water Recycling Facility
Facility Address	450 Walnut Meadows Drive
	Oakley, CA 94561
	Contra Costa, CA
Facility Contact, Title and Phone	Jennifer Skrel, District Engineer, (925) 625-2279 ~~Joe Mueller, Environmental and Process Compliance Manager (925) 625-2279~~
Authorized Person to Sign and Submit Reports	~~Jennifer Skrel, District Engineer, (925) 625-2279~~Joe Mueller, Environmental and Process Compliance Manager (925) 625-2279
Mailing Address	Same as Facility Address
Billing Address	Same as Facility Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Not Applicable
Recycling Requirements	Regulated by WDR Order R5-2013-0010
Facility Permitted Flow	4.3 million gallons per day (MGD), average dry weather flow
Facility Design Flow	4.3 MGD, average dry weather flow
Watershed	Sacramento – San Joaquin Delta
Receiving Water	San Joaquin River
Receiving Water Type	Estuary

A. Ironhouse Sanitary District (hereinafter Discharger) is the owner and operator of the Ironhouse Sanitary District, Water Recycling Facility (hereinafter Facility), a POTW.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the San Joaquin River, a water of the United States, within the Sacramento – San Joaquin Delta. The Discharger was previously regulated by Order R5-2008-0057 and National Pollutant Discharge Elimination System (NPDES) Permit

No. CA0085260 adopted on 25 April 2008 and expired on 1 April 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its WDR's and NPDES permit on 28 September 2012. The application was deemed complete on 15 April 2013. A site visit was conducted on 3 June 2013 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

D. The Discharger also reuses tertiary treated effluent for agricultural irrigation on Jersey Island. This Order only regulates surface water discharges to the San Joaquin River. The regulation of the wastewater treatment plant, storage and reuse of treated wastewater is provided by separate Waste Discharge Requirements (WDR) Order R5-2013-0010.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of the City of Oakley, Bethel Island, and some unincorporated areas of Contra Costa County and serves a population of approximately 38,969. The design average dry weather flow capacity of the Facility is 4.3 million gallons per day (MGD).

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility consists of preliminary influent coarse and fine screening, vortex grit removal, biological treatment using anoxic basins and aeration basins including nitrification and denitrification, membrane bioreactor system, and ultraviolet light (UV) disinfection.

The Facility has a treatment capacity and permitted design flow of 4.3 MGD average dry weather flow and 8.6 MGD maximum wet weather flow. The average influent rate for November 2011 to July 2012 was 2.78 MGD, with a maximum influent flow of 4 MGD.

The Facility is designed to treat biosolids to Class B as defined by 40 CFR Part 503. Waste sludge is mixed with a polymer and dewatered via two belt filter presses. Biosolids are hauled offsite for disposal a landfill. The landfill currently used is Potrero Hills Landfill, Suisun, CA.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 24, T2N, R2E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to the San Joaquin River, a water of the United States within the Sacramento-San Joaquin Delta, at a point latitude 38° 02' 40.75" N and longitude 120° 41' 40.21" W.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order R5-2008-0057 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2008-0057 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data – Discharge Point 001

Parameter	Units	Effluent Limitation			Monitoring Data (18 January 2012 – 31 January 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Average Dry Weather Flow	MGD	4.3	--	--	--	--	4.42
Biochemical Oxygen Demand (5-day at 20ºC)	mg/L	10	15	20	ND	2	10
	lbs/day	359	537	717	ND	40	201
	% Removal	85	--	--	99.9[1]	---	--
pH	standard units	--	--	6.5 – 8.5	--	--	6.6 – 7.9
Total Suspended Solids	mg/L	10	15	20	2	4	18
	lbs/day	359	537	717	19.9	77.6	237
	% Removal	85	--	--	99.7[1]	--	--
Copper, Total Recoverable	µg/L	8.5	--	17	2.5	--	2.5
Lead, Total Recoverable	µg/L	3.4	--	6.9	0.07 DNQ	--	0.07 DNQ
Ammonia Nitrogen, Total (as N)	mg/L	1.1	--	2.1	0.27	--	0.66
	lbs/day	39.4	--	75.3	NR	--	NR
Aluminum, Total Recoverable	µg/L	71	--	143	46	--	46
Chlorine, Total Residual	mg/L	0.01	--	0.02	<0.01	--	<0.01
Electrical Conductivity @ 25°C	µmhos/cm	1,505[2]	--	--	1,080	--	--
Fluoride	mg/L	19.6	--	--	0.65	--	--
Iron, Total Recoverable	µg/L	300[3]	--	--	31[4]	--	--
Manganese, Total Recoverable	µg/L	50[3]	--	--	11[4]	--	--
Methylene Blue Active Substances	µg/L	340[3]	--	--	0.0588[4]	--	--
Settleable Solids	ml/L	0.1	--	0.2	<0.1	--	<0.1
Oil and Grease	mg/L	10	--	15	1.4	--	1.4
Temperature	°F	--	--	[5]	--	--	20.18[6]
Turbidity	NTU	--	2[7]	5[8]/10[9]	--	--	2
Total Coliform Organisms	MPN/100 mL	--	2.2[10]	23[11]/240[9]	--	--	8
Acute Toxicity	% Survival	--	--	70[12]/90[13]	--	--	100[1]

Parameter	Units	Effluent Limitation			Monitoring Data (18 January 2012 – 31 January 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

ND – Non-detect
NR – Not reported
DNQ – Detected but not quantified

[1] Represents the minimum reported result.

[2] (i) From 16 August through 31 March, the effluent electrical conductivity shall not exceed 1,505 µmhos/cm, as a monthly average.

(ii) From 1 April through 15 August, the Discharger shall maintain compliance with the salinity effluent limitations specified below:

(a) If the 14-day running average electrical conductivity of the San Joaquin River at Jersey Point is less than or equal to the concentrations identified in Table 8 of Order R5-2008-0057, the effluent electrical conductivity shall not exceed 1,505 µmhos/cm, as a monthly average.

(b) If the 14-day running average electrical conductivity of the San Joaquin River at Jersey Point is greater than the concentrations identified in Table 8 of Order R5-2008-0057, the effluent electrical conductivity shall not exceed the concentrations specified in Table 7 of Order R5-2008-0057 for the specific water year type and dates shown.

[3] Applied as an annual average effluent limitation.

[4] Represents the maximum observed annual average effluent concentration.

[5] The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20°F.

[6] Represents the maximum observed temperature difference between the effluent and upstream receiving water at Monitoring Locations EFF-001 and RSW-002.

[7] Applied as a daily average effluent limitation.

[8] Not to be exceeded more than 5 percent of the time within a 24-hour period.

[9] Applied as an instantaneous maximum effluent limitation.

[10] Applied as a 7-day median effluent limitation.

[11] Not to be exceeded more than once in any 30-day period.

[12] Minimum for any one bioassay.

[13] Median for any three consecutive bioassays.

D. Compliance Summary

1. The Central Valley Water Board issued Administrative Civil Liability (ACL) Complaint No. R5-2013-0533 on 26 April 2013 which proposed to assess a civil liability of $3,000 against the Discharger for a late self-monitoring report (SMR) submission of their October 2011 SMR. The Discharger settled this ACL by payment.

2. A Compliance Evaluation Inspection (CEI) was performed on 4 May 2012. Major findings from the inspection include the following:

   a. The influent and effluent composite sampler thermometers must be calibrated at least yearly. The thermometers had not been calibrated for over a year, which is a violation of Section VI.A.2.q of Order R5-2008-0057.

   b. The generator run hours log sheet did not clearly identify which generator is being tracked and appeared to be incomplete with missing dates.

3. A CEI was performed on 25 April 2013 Major findings from the inspection include the following:

   a. Order R5-2008-0057, Attachment D – Standard Provisions, Provision V.B states that all reports required by the permit shall be signed by either a principal executive officer or ranking elected official, or by a duly authorized representative of that

person. Provision V.B further states that a person is a duly authorized representative only if the authorization is made in writing by a person described above. The authorization must specify either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual having overall responsibility for environmental matters. The written authorization is to be submitted to the Regional Water Board and State Water Board. The Environmental and Process Compliance Manager signed and certified reports required by Order R5-2008-0057 and submitted such reports on behalf of the Discharger;; however, an authorization by a principal executive officer or ranking elected official had not been submitted to the Central Valley Water Board and State Water Board.

b. Order No. R5-2008-0057, Attachment D – Standard Provisions, Provision I.D requires that "*The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)*" The Discharger maintains two auxiliary generators at the Facility that have the capability to run all essential processes during periods of power outages. It was noted that the PM on the auxiliary generators had not been completed monthly nor documented as specified in the PM program.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. **Water Quality Control Plans.** Requirements of this Order specifically implement the applicable Water Quality Control Plans.

   a. **Basin Plan.** The Central Valley Water Board adopted a Water Quality Control Plan , Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan), that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve

those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

The Basin Plan in Table II-1, Section II, identifies present and potential uses for the Sacramento – San Joaquin Delta, which includes the San Joaquin River at the point of discharge. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Thus, beneficial uses applicable the San Joaquin River are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	San Joaquin River	Existing: Municipal and domestic water supply (MUN); agricultural supply, including stock watering (AGR); industrial process supply (PROC); industrial service supply (IND), water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD); and navigation (NAV).

b. **Bay-Delta Plan**. The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board superseding the 1991 Bay-Delta Plan. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

The State Water Board adopted Decision 1641 (D-1641) on 29 December 1999, and revised on 15 March 2000. D-1641 implements flow objectives for the Bay-Delta Estuary, approves a petition to change points of diversion of the Central Valley Project and the State Water Project in the Southern Delta, and approves a petition to change places of use and purposes of use of the Central Valley Project. The water quality objectives of the Bay-Delta Plan are implemented as part of this Order.

c. **Thermal Plan.** The State Water Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) on 7 January 1971, and amended this plan on 18 September 1975. This plan contains temperature objectives for surface waters. The Thermal Plan is applicable to the discharge from the Facility. For the purposes of the Thermal Plan, the discharge is considered to be a *New Discharge* of *Elevated Temperature Waste* to an *Estuary*, as defined in the Thermal Plan. Therefore, the Discharger must meet the water quality objective at Section 5.B(1) of the Thermal Plan, which requires compliance with Section 5.B(1), as follows:

i. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

ii. Elevated temperature waste discharges either individually or combined iwht other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

iii. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.

iv. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

The Discharger's *Antidegradation Analysis for the Ironhouse Sanitary District Wastewater Treatment Plant, December 2007* (Roberston-Bryan, Inc.) showed that the effluent will not increase the receiving water temperature by more than 1.3°F within the zone of initial mixing. Since the diffuser is 150 feet long at the San Joaquin River where it is 3,300 feet wide, the discharge will not cause a 1°F increase for more than 25 percent of the river cross-section. Requirements of this Order implement the Thermal Plan.

d. **Sediment Quality.** The State Water Board adopted the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* on 16 September 2008, and it became effective on 25 August 2009. This plan supersedes other narrative sediment quality objectives, and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries. Requirements of this Order implement sediment quality objectives of this Plan.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.

3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Antidegradation Policy.** Federal regulation 40 CFR section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 CFR section 122.44(l) restrict backsliding in NPDES permits. These

anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous Order, with some exceptions in which limitations may be relaxed.

6. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

7. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a) of the Water Code, requires that *"the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective"*.

   The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis (RPA) based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

   However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

8. **Storm Water Requirements.** USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The State Water Board Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, does not require facilities to obtain coverage if storm water is captured and treated and/or disposed of with the facility's NPDES permitted process wastewater or if storm water is disposed of to evaporation ponds, percolation ponds, or combined sewer systems. The Discharger indicated during a 3 June 2013 site visit that the Facility captures and treats all storm water that falls on-site. Therefore, coverage under the General Storm Water Permit is not required.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do

not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 USEPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments. ~~On 30 November 2006 USEPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments.~~ The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The 303(d) pollutants listed for the Western Delta are chlorpyrifos, DDT, diazinon, electrical conductivity, group A pesticides, invasive species, mercury, and unknown toxicity.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. Table F-4, below, identifies the 303(d) listings and the status of each TMDL.

Table F-4. 303 (d) List for the Western Portion of the Delta

Pollutant	Potential Sources	Proposed TMDL Completion
Chlorpyrifos	Agriculture, urban runoff/storm sewers	2006
DDT	Agriculture	2011
Diazinon	Agriculture, urban runoff/storm sewers	2007
Electrical Conductivity	Agriculture	2019
Group A Pesticides	Agriculture	2011
Invasive Species	Source unknown	2019
Mercury	Resource extraction	2009
Unknown Toxicity	Source unknown	2019

3. The 303(d) listings and TMDLs have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3 of this Fact Sheet.

E. Other Plans, Polices and Regulations ~~– Not Applicable~~

1. **Drinking Water Policy.** On 26 July 2013, the Central Valley Water Board adopted Resolution No. R5 2013 0098 amending the Basin Plan and establishing a Drinking Water Policy for surface waters of the Sacramento-San Joaquin Delta (Delta) and upstream tributaries below the first major dams. The project area is bounded by Shasta Dam on the Sacramento River, Millerton Dam on the San Joaquin River, and Folsom

Dam on the American River. The Drinking Water Policy was adopted to protect the municipal and domestic supply (MUN) beneficial use and pertains to the following drinking water constituents of concern: organic carbon, Cryptosporidium, Giardia, salt and nutrients. The Policy includes a narrative water quality objective and implementation provisions for Cryptosporidium and Giardia to specifically protect the public water system component of the MUN beneficial use. Approval of the Policy by the State Water Board, USEPA, and the Office of Administrative Law is expected by 2014.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

~~The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.~~

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that *"are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality."* Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that *"[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."*

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00 contains an implementation policy, "Policy for Application of Water Quality Objectives" that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the

Central Valley Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, *"…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)"* in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."*

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a ROWD before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.

4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on 40 CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 CFR section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary

to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133.

Regulations promulgated in 40 CFR section 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the U.S. EPA Administrator.

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. This Order establishes WQBELs that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133 and are necessary to protect the beneficial uses of the receiving stream. (See section IV.C.3.d of this Attachment for the discussion on WQBELs for BOD_5 and TSS). In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

b. **Flow.** The Facility was designed to provide a tertiary level of treatment for up to a design average dry weather flow of 4.3 MGD (ADWF). Therefore, this Order contains an average dry weather discharge flow effluent limit of 4.3 MGD.

c. **pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units.

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-5. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	4.3[1]	--	--	--	--
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20ºC)[3]	mg/L	10	15	20	--	--
	lbs/day[2]	359	538	717	--	--
	% Removal	85	--	--	--	--
pH[3]	standard units	--	--	--	6.0	9.0

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Suspended Solids[3]	mg/L	10	15	20	--	--
	lbs/day[2]	359	538	717	--	--
	% Removal	85	--	--	--	--

[1] The average dry weather discharge flow shall not exceed 4.3 MGD.

[2] Based upon an average dry weather flow of 4.3 MGD.

[3] More stringent WQBELs are applicable to the discharge and are included in this Order, as described further in section IV.C.3 of this Fact Sheet.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA Section 301(b) and 40 CFR section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment, is discussed in section IV.C.3 in the Fact Sheet.

Section 122.44(d)(1)(i) of 40 CFR requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning*…" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses*."

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983*." Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.

The San Joaquin River Basin covers over 15,000 square miles, and includes the entire drainage area to the San Joaquin River. Most of the valley floor is agricultural land, with an agricultural history dating to the 1870's. The San Joaquin River originates from the Sierra Nevada Mountain Range and flows through the northern portion of the San Joaquin Valley to its terminus in the Sacramento-San Joaquin Bay estuary. The River extends approximately 134 miles from Friant Dam to Stevenson where flows are intermittent, and from Stevenson to Vernalis, approximately 60 miles, where flows are perennial. Runoff from rain events occurring in the San Joaquin Valley provide short-term increases in River flows. River flow during the summer is primarily composed of dam releases of snow-melt water for agricultural, urban, recreational and wildlife purposes, and agricultural wastewater. At the points of discharge from the Facility, the San Joaquin River is within the boundary of the Sacramento - San Joaquin Delta.

The San Joaquin River in the vicinity of the Facility is strongly influenced by both tidal and river flows. The river flow is westerly during ebb tides and periods of high Delta outflow. During strong flood (incoming) tides, the river flow reverses towards the east. Tides in the Bay Area are classified as mixed semidiurnal, with two flood tides and two ebb tides of unequal range occurring over a 24.8-hour period. Mean tidal range about is 3 feet. Currents in the commercial shipping channel can be as high as 1.1 to 1.5 feet per second (fps).

The magnitude of tidal influence in the area fluctuates with gravitational influences (solar and lunar) and with freshwater outflow from the Delta. Freshwater outflow varies seasonally as well as in extended cycles. Low levels of inflow are considered to be 3.5 to 5 million cubic feet per second (cfs), while higher levels may range from 7.5 to 15 million cfs. Water diversions by the State Water Project (SWP) and the Central Valley Project (CVP) have had increasingly pronounced effects on freshwater outflows in the Delta, especially during years with below average precipitation. Salinity levels in the vicinity of the discharge increase under such conditions. Saltwater intrusion and influence in the area increases during periods of low freshwater flow. As more water is diverted from the San Joaquin River for human use, the zone of saltwater intrusion extends farther upstream. Prior to 1984, this zone, termed the transition, entrapment, or null zone, was typically located in Suisun Bay during much of the year (October through March). Since 1984, the

transition zone has shifted more or less permanently to the channels of the Sacramento and San Joaquin rivers.

b. **Effluent and Ambient Background Data.** The Discharger began discharging at Discharge Point 001 on 20 October 2011 and was granted a 90-day grace period from mandatory minimum penalties pursuant to California Water Code 13385(j)(1)(D)(i), which ended on 17 January 2012. Thus, effluent monitoring data collected prior to 18 January 2012 is not representative of effluent quality from the new Facility and the RPA, as described in section IV.C.3 of this Fact Sheet, was based on effluent data collected during periods of discharge to the San Joaquin River between 18 January 2012 and 31 January 2013. Order R5-2008-0057 only required receiving water monitoring when discharges at Discharge Point 001 were occurring; therefore, receiving water monitoring did not commence until 20 October 2011. Thus, the RPA is based on receiving water collected between 17 January 2012 and 31 January 2013.

c. **Assimilative Capacity/Mixing Zone**

i. **Receiving Water Characteristics.** The Facility discharges to the San Joaquin River at Jersey Island, which is within the tidal estuary of the Delta. The tidal zone in this area of the San Joaquin River includes flood and ebb tides that move the river 5 miles upstream and downstream, and slack tides occur with no river movement for about 1 hour, twice each day. Multiple dosing of the receiving water with effluent occurs as the tide moves the water column upstream and downstream past the point of discharge. The complex dynamics of the stream flow, the tidal flows, the slack flows, and the State and federal pumping operations must be considered in an evaluation of the available dilution for the discharge. The San Joaquin River is approximately 3,300 feet wide at the location of the diffuser. The diffuser section is 150 feet long at a depth of 20 to 30 feet and extends 550 feet offshore. The average tidal flow is 150,000 cfs and the average dry weather flow design capacity of the discharge is 4.3 mgd.

ii. **Regulatory Guidance for Dilution Credits and Mixing Zones.** The Discharger has requested mixing zones and dilution credits for compliance with human health water quality criteria. The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. The CWA directs the states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR 122.44 and 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the USEPA *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001)(TSD).

For non-Priority Pollutant constituents the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed,*

different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge."

For priority pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board.* ***The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.*** *The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board*." [***emphasis added***]

For incompletely-mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, Section 1.4.2.2 of the SIP requires the following to be met:

"***A mixing zone shall be as small as practicable****. The following conditions must be met in allowing a mixing zone:* [**emphasis added**]

A: A mixing zone shall not:
1. compromise the integrity of the entire water body;
2. cause acutely toxic conditions to aquatic life passing through the mixing zone;
3. restrict the passage of aquatic life;
4. adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;
5. produce undesirable or nuisance aquatic life;
6. result in floating debris, oil, or scum;
7. produce objectionable color, odor, taste, or turbidity;
8. cause objectionable bottom deposits;
9. cause nuisance;
10. dominate the receiving water body or overlap a mixing zone from different outfalls; or
11. be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."

Section 1.4.2.1 of the SIP establishes the authority for the Central Valley Water Board to consider dilution credits based on the mixing zone conditions in a receiving water. Section 1.4.2.1 in part states:

"*The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations (described in Section 1.4).* ***Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.***" [**emphasis added**]

The mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives, but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

iii. **Dilution/Mixing Zone Study Results.** As described below, the Discharger submitted two mixing zone modeling reports as part of the October 2006 *Draft Supplemental Environmental Impact Report for Ironhouse Sanitary District Wastewater Treatment Plant Expansion* (Supplemental EIR) to support the allowance of mixing zones and dilution credits in Order R5-2008-0057. These reports include the October 2006 *Evaluation of Near-field Patterns for the Ironhouse Sanitary District Proposed Diffuser* (Jones and Stokes) and the *Simulated Dilution and Transport of Ironhouse Sanitary District Treated Effluent to Contra Costa Water District (CCWD) and Antioch Water Supply Intakes* (Jones and Stokes). As discharges to the San Joaquin River from the new Facility had not yet commenced, Order R5-2008-0057 required the Discharger to conduct a mixing zone validation study to verify the predictions of the modeling analysis in the Supplemental EIR. Thus, the Discharger submitted an 18 February 2013 *Ironhouse Sanitary District Water Recycling Facility Mixing Zone Validation Study* (Robertson-Bryan, Inc.) (2013 Study).

(a) **2006 Modeling Studies.** Jones and Stokes prepared an analysis of the mixing and transport of effluent within the Delta for the October 2006 Supplemental EIR. To evaluate the tidal dilution of the discharge, the Department of Water Resources (DWR)'s Delta Simulation Model II (DSM2) was used with baseline flows for reservoir operations based on CALSIM results for the 2020 Operations Criteria and Plan. The DWR DSM2 model is a one-dimensional mathematical model for dynamic simulation of one-dimensional hydrodynamics (HYDRO), water quality (QUAL) and particle tracking (PTM) that provides a simulation package for analysis of complex hydrodynamic, water quality and ecological conditions in river and estuarine systems. The DSM2 model uses the 1976-1991 period as representative of tidal flows and salinity. The future Delta flow operations used in the DSM2 model are based on the United States Bureau of Reclamation CALSIM model and uses monthly hydrology during 1922 – 1991 to simulate the future Central Valley Project (CVP) and State Water Project (SWP) operations. The 2020 Operations Criteria and Plan of CVP and SWP operations were developed by USBR in 2004. Based on the modeling analysis, the following effluent concentrations and mixing zone dimensions were allowed in Order R5-2008-0057:

Criteria/Beneficial Use	Effluent Contribution to Receiving Water Concentration	Mixing Zone Dimensions	Representative Effluent and Receiving Water Quality
Acute (1-hour) aquatic life criteria (at slack tide)	5.19%[1]	150 ft wide by 175 ft	Maximum Concentration
Chronic (4-day) aquatic life criteria	3.53%[1]	150 ft wide by 175 ft	Maximum Concentration
Long-term human health criteria	0.1%[2]	5 miles upstream and downstream	Mean Concentration

[1] Maximum effluent contribution.
[2] Average effluent contribution.

(b) **2013 Validation Studies.** Field investigations of near-field mixing were conducted on 5 September 2012 and 10 October 2012. During each study, rhodamine WT dye was injected into the Facility's effluent discharge in the outfall pipe approximately 400 feet prior to the diffuser. The 5 September dye release occurred as the receiving water transitioned from ebb to flood tide and included slack tide condition and the 10 October dye release occurred over a 13 hour period with slack tide conditions/flow reversals observed three times. The actual observed dilution ratios were 80:1 on 5 September and 90:1, 65:1, 70:1 on 10 October. During both dye release events the observed effluent flow rate was approximately one-half the maximum permitted average dry weather flow rate of 4.3 MGD. In addition, both events include measurements taken during slack tide conditions. Given these effluent and receiving water conditions, the observed dilution ratios are consistent with the Supplemental EIR results.

Dye concentrations in the far-field were measured on 10 October 2012 from a series of locations that extended from 7,000 feet upstream to 3,000 feet downstream of the discharge. Dye was released in the discharge over a 13-hour period which included flood and ebb tide conditions. Observed far-field dilutions on 10 October were on the order of 1,000:1 at a distance of 1,000 – 2,000 feet upstream or downstream of the discharge which suggests that the DSM2 modeling results are likely to be conservative with respect to long-term chronic conditions. The validation study results cannot completely confirm or disconfirm the far-field modeling due to the short durations of the dye injection studies (~13 hours); nevertheless, the validation study results support that the modeled estimates of far-field dilution are conservative.

iv. **Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria.** USEPA Region VIII, in its "*EPA Region VIII Mixing Zones and Dilution Policy*", recommends no dilution for acute aquatic life criteria, stating the following, "*In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone*." The Discharger has requested acute and chronic mixing zones for compliance with acute and chronic water quality criteria. Based on the mixing zone study, the requested acute and chronic aquatic life mixing zones are less than 150 feet wide and extends less than 175 feet downstream of the diffuser.

The acute and chronic mixing zones meet the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*." The San Joaquin River is approximately 3,300 feet wide at the diffuser. The acute and chronic mixing zones are approximately 150 feet x 175 feet. The mixing zones are small and make up less than one-half of the stream width. The mixing zones do not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. USEPA recommends that float times through a mixing zone less than 15 minutes ensures that there will not be lethality to passing organisms. The acute mixing zone allowed in this Order extends only 175 feet downstream from the diffuser. The worst-case condition for evaluating the acute dilution credit is slack tide, in which there is no river movement for approximately 1 hour, twice each day. Due to the design of the diffuser ports, each port will maintain a jet velocity of 5 feet per second (fps) allowing for turbulent mixing and rapid river entrainment. In addition, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger conducted a mixing zone study to evaluate the near-field effects of the discharge. The Discharger evaluated the zone of passage around the mixing zone where water quality objectives are met. The result of the mixing zone study indicates there is an adequate zone of passage for aquatic life that is at least one-half the width of the San Joaquin River.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The acute and chronic mixing zones will not cause acutely toxic conditions, allow an adequate zone of passage, and are sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meets Title 22 (or equivalent) tertiary filtration, which will ensure continued compliance with these mixing zone requirements. With these requirements the acute and chronic mixing zones will not produce

undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The acute and chronic mixing zones are small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zones do not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The acute and chronic mixing zones are not near a drinking water intake.

v. **Evaluation of Available Dilution for Human Health Carcinogen Criteria.** Section 1.4.2.2 of the SIP, provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for protection of human health, the TSD states that, "...*the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes.*" There are no drinking water intakes in the human health carcinogen mixing zone. Based on the Discharger's 2006 and 2013 mixing zone studies, the human health carcinogen mixing zone extends 5 miles upstream and downstream of the diffuser and dilution credit of 1,000:1 is allowed. The human health carcinogen criteria mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*." The human health mixing zone is not applicable to aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* –The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(c) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable

color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone. The human health mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's *Water Quality Standards Handbook, 2d Edition* (updated July 2007), Section 5.1, and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

vi. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation).** When determining to allow dilution credits for a specific pollutant several factors must be considered, such as, available assimilative capacity, facility performance, and best practicable treatment or control. In this subsection a pollutant-by-pollutant evaluation of dilution is discussed.

(a) **Ammonia and Nitrate Plus Nitrite.** Although assimilative capacity is available and dilution credits for aquatic life and human health are allowed, this Order does not allow for mixing zones or dilution credits for ammonia or nitrate plus nitrite since the new Facility is capable of full nitrification and denitrification and the Discharger's antidegradation analysis for the new Facility did not consider dilution.

(b) **Chronic Whole Effluent Toxicity.** As discussed in section IV.C.2.iii, above, a mixing zone for chronic toxicity meets the requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*.", and Section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*" Based on the Discharger's mixing zone studies, the chronic mixing zone extends 275 feet downstream. Previous Order R5-2008-0057 allowed a chronic whole effluent toxicity monitoring trigger of 16 TUc, which allows for a dilution credit of 16:1. This Order retains the chronic WET numeric trigger of 16 TUc.

vii. **Regulatory Compliance for Dilution Credits and Mixing Zones.** To fully comply with all applicable laws, regulations and policies of the State, Central Valley Water Board approved a mixing zone and the associated dilution credits based on the following:

(a) Mixing zones are allowed under the SIP provided all elements contained in Section 1.4.2.2 are met. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined that these factors are met.

(b) Section 1.4.2.2.of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined the mixing zone is as small as practicable.

(c) In accordance with Section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls. The mixing zone is small (approximately 150 feet upstream and downstream of the discharge) relative to the large size of the receiving water (the San Joaquin River is 3,300 feet wide at the point of discharge), is not at or near a drinking water intake, and does not overlap a mixing zone from a different outfall.

(d) The Central Valley Water Board is allowing mixing zones for human carcinogen and acute aquatic toxicity criteria only and has determined allowing such mixing zones will not cause acutely toxic conditions to aquatic life passing through the mixing zones, because the acute mixing zone is very short and end-of-pipe effluent limits for acute toxicity are required.

(e) The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws, because the mixing zones are for human carcinogen and acute aquatic toxicity criteria are relatively small, and acutely toxic conditions will not occur in the mixing zones. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the Order establishes end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

(f) As required by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Central Valley Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water.

(g) The Central Valley Water Board has determined mixing zone complies with the SIP for priority pollutants.

(h) The mixing zone studies indicate the maximum allowed dilution factors for acute and chronic aquatic toxicity criteria to be 20:1 and 28:1, respectively. The mixing zone study indicates the maximum allowed dilution factor to be 1000:1 for human health constituents. Section 1.4.2.2.B of the SIP, in part states, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." The Central Valley Water Board has determined these dilution factors are not needed or necessary for the Discharger to

achieve compliance with this Order, except for salinity and the numeric chronic toxicity trigger, as described above.

(i) The Central Valley Water Board has determined the mixing zone complies with the Basin Plan for non-priority pollutants. The Basin Plan requires a mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures and guidelines in Section 5.1 of USEPA's *Water Quality Standards Handbook*, 2nd Edition (updated July 2007) and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

(j) The Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Anti-degradation Policy for receiving waters outside the allowable mixing zone for ammonia and nitrate plus nitrite. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of Resolution 68-16 states:

"*Any activity which produces or may produce a waste or increased volume or concentration of waste and which dischargers or proposed to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained*."

The Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained.

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[1] and

[1] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[2]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. **Conducting the Reasonable Potential Analysis (RPA).** The SIP in Section 1.3 states, "*The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective*." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the maximum effluent concentration (MEC) and maximum ambient background concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

(a) The SIP requires WQBELs if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the

[1] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

[2] All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without also changing the hardness.

reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

(b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the maximum ambient background concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[1]. For comparing the maximum ambient background concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

ii. **Calculating Water Quality-Based Effluent Limitations.** The remaining discussion in this section relates to the development of WQBELs when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

A 2006 Study[2] developed procedures for calculating the effluent concentration allowance (ECA)[3] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[4], is as follows:

CTR Criterion = WER x ($e^{m[\ln(H)]+b}$) (Equation 1)

Where:

H = hardness (as $CaCO_3$)[5]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants “m” and “b” are specific to both the metal under consideration, and the type of total recoverable

[1] The pollutant must also be detected in the effluent.
[2] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.
[4] 40 CFR § 131.38(b)(2).
[5] For this discussion, all hardness values are in mg/L as $CaCO_3$.

criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The equation for the ECA is defined in Section 1.4, Step 2, of the SIP and is as follows:

ECA = C (when C ≤ B)[1] (Equation 2)

Where:

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)

B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as "Concave Down Metals". "Concave Down" refers to the shape of the curve represented by the relationship between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as "Concave Up Metals".

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[2]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[3]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 150 mg/L to 210 mg/L, based on 13 samples. The upstream receiving water hardness varied from 44 mg/L to 130 mg/L, based on 13 samples, and the downstream receiving water hardness varied from 52 mg/L to 280 mg/L. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 150 mg/L. As demonstrated in the example shown in Table F-6, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

[1] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e., C ≤ B).
[2] 2006 Study, p. 5700
[3] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 44 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

Using these reasonable worst-case receiving water conditions, a simple mass balance (as shown in Equation 3, below) accounts for all possible mixtures of effluent and receiving water under all flow conditions.

$C_{MIX} = C_{RW} \times (1\text{-}EF) + C_{Eff} \times (EF)$ (Equation 3)

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)
C_{RW} = Upstream receiving water concentration
C_{Eff} = Effluent concentration
EF = Effluent Fraction

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria.[1]

[1] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-6 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

Table F-6. Copper ECA Evaluation

Lowest Observed Effluent Hardness					**150 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**44 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Copper Concentration					**4.6 µg/L[1]**
Copper $ECA_{chronic}$[2]					**13 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Copper[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	45	4.7	4.7	**Yes**
	5%	49	5.1	5.1	**Yes**
	15%	60	6.0	5.9	**Yes**
	25%	71	6.9	6.8	**Yes**
	50%	97	9.1	8.9	**Yes**
Low Flow	75%	124	11	11	**Yes**
	100%	150	13	13	**Yes**

1 Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 44 mg/L.

2 ECA calculated using Equation 1 for chronic criterion at a hardness of 150 mg/L.

3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.

4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

5 Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.

6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

ECA for Acute Cadmium, Lead, and Acute Silver – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow conditions (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-7).

$$ECA = \left(\frac{m(H_e - H_{rw})\left(e^{m\{\ln(H_{rw})\}+b}\right)}{H_{rw}} \right) + e^{m\{\ln(H_{rw})\}+b} \qquad \text{(Equation 4)}$$

where:

m, b = criterion specific constants (from CTR)
H_e = lowest observed effluent hardness
H_{rw} = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead**,** a Concave Up Metal, in Table F-7, below. As previously mentioned, the lowest effluent hardness is 150 mg/L, while the upstream receiving water hardness ranged from 44 mg/L to 130 mg/L, and the downstream receiving water hardness ranged from 52 mg/L to 280 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 44 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-7, for lead.

Table F-7. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**150 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**44 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**1.1 µg/L[1]**
Lead $ECA_{chronic}$[2]					**4.5 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	45	1.2	1.2	**Yes**
	5%	49	1.3	1.3	**Yes**
	15%	60	1.7	1.6	**Yes**
	25%	71	2.0	2.0	**Yes**
	50%	97	3.1	2.8	**Yes**
	75%	124	4.2	3.7	**Yes**
Low Flow	100%	150	5.3	4.5	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 44 mg/L.

2 ECA calculated using Equation 4 for chronic criteria.

3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.

4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.

6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-8 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-8. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)[1]	
	acute	chronic
Copper	21	13
Chromium III	2,400	290
Cadmium	6.7	3.4
Lead	120	4.6
Nickel	660	74
Silver	5.1	--
Zinc	170	170

[1] Results shown as two significant figures in accordance with CTR.

3. Determining the Need for WQBELs

a. Constituents with Total Maximum Daily Limitation (TMDL)

i. **Diazinon and Chlorpyrifos.** The Central Valley Water Board developed WQBELs for diazinon and chlorpyrifos that have available wasteload allocations under a TMDL. The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento – San Joaquin Delta was adopted by the Central Valley Water Board on 23 June 2006 and became effective on 10 October 2007. The effluent limitations for these pollutants were established regardless of whether or not there is reasonable potential for the pollutants to be present in the discharge at levels that would cause or contribute to a violation of water quality standards. The Central Valley Water Board developed WQBELs for these pollutants pursuant to 40 CFR 122.44(d)(1)(vii), which does not require or contemplate an RPA. Similarly, the SIP at Section 1.3 recognizes that an RPA is not appropriate if a TMDL has been developed.

This Order contains WQBELs for diazinon and chlorpyrifos. The limitations are established based on the wasteload allocation of 0.025 µg/L (acute) and 0.015 µg/L (chronic) for chlorpyrifos, and 0.16 µg/L (acute) and 0.10 µg/L (chronic) for diazinon contained in the TMDL for Diazinon and Chlorpyrifos Runoff into the Sacramento – San Joaquin Delta. As required by 40 CFR 122.44(d)(1)(vii), the Central Valley Water Board shall ensure there are WQBELs for diazinon and chlorpyrifos in the WDR's that is consistent with the assumptions and requirements of the available wasteload allocation. Based on the water quality monitoring done at the time of the TMDL adoption, which set the wasteload allocation at the level necessary to attain water quality standards, the Central Valley Water Board has determined that the WQBELs are consistent with the assumptions of the TMDL. Similarly, compliance with the effluent limitations will satisfy the requirements of the TMDL.

ii. **Methylmercury.** The Central Valley Water Board developed WQBELs for mercury and methylmercury that have wasteload allocations under a TMDL, the Basin Plan's Delta Mercury Control Program which became effective on 20 October 2011. The Delta mercury Control Program contains aqueous methylmercury waste load allocations that are calculated to achieve fish tissue objectives contained in Appendix 43 of the Basin Plan, *"…the average*

methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length." Methylmercury reductions are assigned to discharges with concentrations of methylmercury greater than 0.06 ng/L (the concentration of methylmercury in water to meet the fish tissue objectives). The effluent limitations for these pollutants were established regardless of whether or not there is reasonable potential for the pollutants to be present in the discharge at levels that would cause or contribute to a violation of water quality standards. The Central Valley Water Board developed WQBELs for these pollutants pursuant to 40 CFR 122.44(d)(1)(vii), which does not require or contemplate an RPA. Similarly, the SIP at Section 1.3 recognizes that an RPA is not appropriate if a TMDL has been developed.

This Order contains a WQBEL for methylmercury. The methylmercury limitation was established based on the wasteload allocation (WLA) for the Facility in the Basin Plan's Delta Mercury Control Program. As required by 40 CFR 122.44(d)(1)(vii), the Central Valley Water Board shall ensure there is a WQBEL for methylmercury in the WDR's that is consistent with the assumptions and requirements of the available wasteload allocation.

The WLA in the Basin Plan for the Discharger is 0.03 grams per year. However, there was an error in calculating the WLA. The TMDL support documentation provides the values used to develop the Discharger's WLA. Using the approach in the TMDL to calculate the WLA, the WLA for the Discharger should be 0.3 grams per year. Central Valley Water Board staff recognizes that there is an error and plans to correct the WLA after the Phase 1 TMDL review is conducted. However, at this time, the WLA included in the Basin Plan must be used. This Order includes a compliance schedule for methylmercury and a reopener provision to modify the methylmercury effluent limit after the Phase 1 studies are completed. There are no plans to modify the Basin Plan prior to completion of the Phase 1 studies.

b. **Constituents with No Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water at concentrations exceeding applicable water quality criteria); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. However, the following constituents were found to have no reasonable potential after assessment of the data:

i. **Aluminum**

Aluminum is the third most abundant element in the earth's crust and is ubiquitous in both soils and aquatic sediments. When mobilized in surface waters, aluminum has been shown to be toxic to various fish species. However, the potential for aluminum toxicity in surface waters is directly related to the chemical form of aluminum present, and the chemical form is highly dependent on water quality characteristics that ultimately determine the mechanism of

aluminum toxicity. Surface water characteristics, including pH, temperature, colloidal material, fluoride and sulfate concentrations, and total organic carbon, all influence aluminum speciation and its subsequent bioavailability to aquatic life. Calcium [hardness] concentrations in surface water may also reduce aluminum toxicity by competing with monomeric aluminum (Al^{3+}) binding to negatively charged fish gills.

(a) **WQO.** The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters as part of section 131.38 Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBEL's in the Central Valley Region's NPDES permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective*." Relevant information includes, but is not limited to (1) USEPA Ambient Water Quality Criteria (NAWQC) and subsequent Correction, (2) site-specific conditions of San Joaquin River, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).)

USEPA NAWQC*.* USEPA recommended the NAWQC aluminum acute criterion at 750 µg/L based on test waters with a pH of 6.5 to 9.0. USEPA also recommended the NAWQC aluminum chronic criterion at 87 µg/L based upon the following two toxicity tests. All test waters contained hardness at 12 mg/L as $CaCO_3$.

(1) Acute toxicity tests at various aluminum doses were conducted in various acidic waters (pH 6.0 – 6.5) on 159- and 160-day old striped bass. The 159-day old striped bass showed no mortality in waters with pH at 6.5 and aluminum doses at 390 µg/L, and the 160-day old striped bass showed 58% mortality at a dose of 174.4 µg/L in same pH waters. However, the 160-day old striped bass showed 98% mortality at aluminum dose of 87.2 µg/L in waters with pH at 6.0, which is USEPA's basis for the 87 µg/L chronic criterion. The varied results draw into question this study and the applicability of the NAWQC chronic criterion of 87 µg/L.

(2) Chronic toxicity effects on 60-day old brook trout were evaluated in circumneutral pH waters (6.5-6.9 pH) in five cells at various aluminum doses (4, 57, 88, 169, and 350 µg/L). Chronic evaluation started upon hatching of eyed eggs of brook trout, and their weight and length were measure after 45 days and 60 days. The 60-day old brook trout showed 24% weight loss at 169 µg/L of aluminum and 4% weight loss at 88 µg/L of aluminum, which is the basis for USEPA's

chronic criteria. Though this test study shows chronic toxic effects 4% reduction in weight after exposure for 60-days, the chronic criterion is based on 4-day exposure; so again, the applicability of the NAWQC chronic criterion of 87 µg/L is questionable.

Site-specific Conditions. Effluent and San Joaquin River monitoring data indicate that the pH and hardness values are not similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as reactive in the San Joaquin River as in the previously described toxicity tests. The pH of the San Joaquin River the receiving water, ranged from 7 to 8.3 with an average of 7.7 based on 27 monitoring results obtained between 20 October 2011 and 31 January 2013. These water conditions are circumneutral pH where aluminum is predominately in the form of $Al(OH)_3$ and non-toxic to aquatic life. The hardness of the San Joaquin River ranged from 44 mg/L to 130 mg/L based on 13 samples, which is above the conditions, and thus less toxic, than the tests used to develop the chronic criterion. The San Joaquin River supports aquatic species such as Chinook salmon and steelhead (rainbow trout). Brook trout and striped bass have not been surveyed nor expected to be present (http://bios.dfg.ca.gov/) since striped bass is non-native to California and brook trout is present in higher elevation lakes and streams.

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Receiving Water
pH	standard units	6.0 – 6.5	6.6-7.6	7-8.3
Hardness, Total (as $CaCO_3$)	mg/L	12	150-210	44-130
Aluminum, Total Recoverable	µg/L	87.2 - 390	10-46	140-463

Local Environmental Conditions and Studies. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of the San Joaquin River are similar, as shown in the table below, and thus the results of these site-specific aluminum toxicity tests are relevant and appropriate for the San Joaquin River. As shown in the following table, all EC_{50} toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in surface waters within the Central Valley Region, including the San Joaquin River is less toxic (or less reactive) to aquatic species then demonstrated in the toxicity tests that USEPA used for the basis of establishing the chronic criterion of 87 µg/L. This new information, and review of the toxicity tests USEPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to the San Joaquin River.

Central Valley Region Site-Specific Toxicity Data

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
Auburn	*Ceriodaphnia dubia*	Effluent	99	>5270	7.44	>19.3
	“ “	Surface Water	16	>5160	7.44	>12.4
Manteca	“ “	Surface Water/Effluent	124	>8800	9.14	N/C
	“ “	Effluent	117	>8700	7.21	>27.8

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
	" "	Surface Water	57	7823	7.58	25.0
	" "	Effluent	139	>9500	7.97	>21.2
	" "	Surface Water	104	>11000	8.28	>24.5
	" "	Effluent	128	>9700	7.78	>25.0
	" "	Surface Water	85	>9450	7.85	>25.7
	" "	Effluent	106	>11900	7.66	>15.3
	" "	Surface Water	146	>10650	7.81	>13.7
Modesto	" "	Surface Water/Effluent	120/156	31604	8.96	211
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5
Placer County	" "	Effluent	150	>5000	7.4 – 8.7	>13.7
Manteca	*Daphnia magna*	Surface Water/Effluent	124	>8350	9.14	N/C
Modesto	" "	Surface Water/Effluent	120/156	>11900	8.96	>79.6
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5
Manteca	*Oncorhynchus mykiss* (rainbow trout)	Surface Water/Effluent	124	>8600	9.14	N/C
Auburn	" "	Surface Water	16	>16500	7.44	N/C
Modesto	" "	Surface Water/Effluent	120/156	>34250	8.96	>229
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5

[1] Hardness values may be biased high because the EDTA titrimetic method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc will be measured as hardness) producing hardness numbers that are likely to be greater than the calculation of hardness based upon the ICP analysis of calcium and magnesium. Upstream receiving water hardness ranged from 30 to 50.9 mg/L as $CaCO_3$ between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as $CaCO_3$ on 4 October 2005, 7 days prior to the Feasibility Assessment (first phase of a Water Effects Ratio study) sample collection date of 11 October 2005. It is likely that matrix interferences from other metals were responsible for the unexpected hardness values reported by Pacific EcoRisk.

The Discharger has not conducted a toxicity test for aluminum; however, the Cities of Manteca and Modesto conducted toxicity tests in the San Joaquin River. As shown, the test water quality characteristics of the San Joaquin River near Manteca and Modesto are similar for pH and hardness, with the hardness ranging from 57 to 156 mg/L as $CaCO_3$ in comparison to the hardness of the San Joaquin River near the discharge that averages 81 mg/L as $CaCO_3$. Thus results of site-specific studies conducted on the San Joaquin River near Manteca and Modesto would represent conservative assumptions for the San Joaquin River near the discharge. Therefore, the Cities of Manteca and Modesto aluminum toxicity test studies are relevant and represent conservative assumptions in this case for use in determining the specific numerical criteria to be used in determining compliance with the Basin Plan's narrative toxicity objective. The Cities of Manteca and Modesto aluminum toxicity study resulted in a minimum site-specific aluminum objective of 7,823 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for the San Joaquin River near the discharge.

Order R5-2008-0057 contained limitations for aluminum based on the NAWQC chronic criterion of 87 µg/L. DPH has established secondary maximum contaminant levels (MCLs) to assist public drinking water systems in managing their drinking water for aesthetic conditions such as

taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L. U.S. EPA has also adopted an NAWQC acute criterion of 750 µg/L for the protection of aquatic life.

(b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Aluminum is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average aluminum concentrations.

The maximum annual average effluent concentration for aluminum was 18 µg/L based on 11 samples collected between 18 January 2012 and 31 January 2013. Effluent aluminum is consistently less than the concentrations in the receiving water and below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of aluminum. Since the discharge does not demonstrate reasonable potential, the effluent limitations for aluminum have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

ii. **Chlorine, Total Residual**

(a) **WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective. The Order R5-2009-0057 established limitations for total residual chlorine of 0.01 mg/L (AMEL) and 0.02 mg/L (MDEL). Waste Discharge Requirements Order R5-2008-0057 established an effluent limitation for total residual chlorine.

(b) **RPA Results.** In October 2011, the Discharger completed upgrades to the Facility, which included replacing chlorine disinfection with UV disinfection. Chlorine is now only used when the Discharger is cleaning the membrane filters, and during cleaning, water flow is stopped and the chlorinated water is rerouted back to the headworks for treatment before being discharged into the receiving water. Because the Discharger no longer uses chlorine disinfection, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective and effluent limitations for chlorine residual have been removed. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iii. **Diazinon and Chlorpyrifos**

(a) **WQO.** The Central Valley Water Board completed a total maximum daily load (TMDL) for diazinon and chlorpyrifos in the Sacramento – San Joaquin Delta Waterways and amended the Basin Plan to include diazinon and chlorpyrifos waste load allocations and water quality objectives. The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento – San Joaquin Delta was adopted by the Central Valley Water Board on 23 June 2006 and became effective on 10 October 2007.

The amendments "…*modifies Basin Plan Chapter III (Water Quality Objectives) to establish site specific number objectives for diazinon and chlorpyrifos in the Delta Waterways." The amendment also "…identifies the requirements to meet the additive formula already in Basin Plan Chapter IV (Implementation), for the additive toxicity of diazinon and chlorpyrifos*."

The amendment states that "*The waste load allocations for all NPDES-permitted dischargers…shall not exceed the sum (S) of one (1) as defined below.*

$$S = \frac{C_d}{WQO_d} + \frac{C_c}{WQO_c} \leq 1.0$$

Where:

C_d *= diazinon concentration in µg/L of point source discharge*

C_c *= chlorpyrifos concentration in µg/L of point source discharge*

WQO_d *= acute or chronic diazinon water quality objective in µg/L*

WQO_c *= acute or chronic chlorpyrifos water quality objective in µg/L*

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as 'non-detectable' concentrations are considered to be zero."

Appendix A of the Diazinon and Chlorpyrifos TMDL lists waterways subject to the TMDL and includes the San Joaquin River.

(b) **RPA Results.** Diazinon was not detected in the effluent. However, due to the TMDL for diazinon and chlorpyrifos in the delta, WQBELs for these constituents are required. The TMDL waste load allocation applies to all NPDES dischargers to delta waterways and will serve as the basis for WQBELs at Discharge Point 001.

(c) **WQBELs.** WQBELs for diazinon and chlorpyrifos are required based on the TMDL for diazinon and chlorpyrifos for the Delta. Therefore, this Order includes effluent limits calculated based on the waste load allocations contained in the TMDL, as follows:

i. Average Monthly Effluent Limit

$$S_{AMEL} = \frac{C_{D\ AVG}}{0.079} + \frac{C_{C\ AVG}}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L

$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

ii. Maximum Daily Effluent Limit

$$S_{MDEL} = \frac{C_{D\ MAX}}{0.16} + \frac{C_{C\ MAX}}{0.025} \leq 1.0$$

$C_{D\text{-}max}$ = maximum daily diazinon effluent concentration in µg/L

$C_{C\text{-}max}$ = maximum daily chlorpyrifos effluent concentration in µg/L

(d) **Plant Performance and Attainability.** Diazinon and chlorpyrifos were not detected in the effluent. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. **Copper**

(a) **WQO.** The CTR includes hardness-depended criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The Basin Plan includes a site specific objective for the Sacramento – San Joaquin River Delta of 10 µg/L (dissolved). Using the default USEPA translator (i.e., 0.96 for acute and chronic criteria), the Basin Plan objective is 10.4 µ/L (total recoverable). WDRs Order R5-2008-0057 established effluent limitations for copper based on the Basin Plan objective.

(b) **RPA Results.** Footnote 4, page 3, of the Introduction of the SIP states "*If a water quality objective and a CTR criterion are in effect for the same priority pollutant, the more stringent of the two applies*." The BP objective cannot be directly compared to the CTR criteria to determine which is the most stringent objective because they have different averaging periods and the CTR criteria vary with hardness. In this situation, the RPA has been conducted considering both the CTR criteria and the BP water quality objectives.

Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as copper. The RPA was conducted using the upstream receiving water hardness to calculate the criteria for comparison to the maximum ambient background concentration, and likewise using the reasonable worst-case downstream hardness to compare the MEC. The table below shows the specific criteria used for the RPA.

Table F-9. Copper Criteria

	CTR Chronic Criteria (Total Recoverable)	CTR Acute Criteria (Total Recoverable)	Site-Specific BP Objective (Total Recoverable)	Maximum Concentration	Reasonable Potential? (Y/N)

	CTR Chronic Criteria (Total Recoverable)	CTR Acute Criteria (Total Recoverable)	Site-Specific BP Objective (Total Recoverable)	Maximum Concentration	Reasonable Potential? (Y/N)
Receiving Water	4.6 µg/L[1]	6.5[1]	10.4 µg/L	2.9 µg/L[2]	No
Effluent	13 µg/L[3]	21[3]	10.4 µg/L	2.5 µg/L[4]	No

[1] Based on lowest observed upstream receiving water hardness of 44 mg/L (as $CaCO_3$).
[2] Based on reasonable worst-case downstream hardness as described in section IV.C.2.e of this Fact Sheet.
[3] Maximum ambient background receiving water copper concentration based on 13 samples from 20 October 2011 through 31 January 2013 (minimum MDL 0.07 µg/L, minimum RL 0.5 µg/L).
[4] MEC for copper based on 18 samples from 18 January 2012 to January 2013 (minimum MDL 0.07 µg/L, minimum RL 0.5 µg/L).

As shown in the table above, the MEC and the ambient background receiving water concentration do not exceed the CTR criteria or the Basin Plan objective. Therefore, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion and the effluent limitation for copper has not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulation (see section IV.D.3 of the Fact Sheet).

v. **Fluoride**

(a) **WQO.** The Agriculture Water Goal, that would apply the narrative chemical constituents objective, is 1.0 mg/L as a long-term average based on Water Quality for Agriculture, Food, and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Wescot, Rome, 1985). WDRs Order R5-2008-0057 established an effluent limitation for fluoride based on this agricultural water quality goal.

(b) **RPA Results.** The maximum fluoride concentration in the effluent was 0.66 mg/L (minimum MDL 0.01 mg/L, minimum RL 0.1 mg/L) based on 11 samples collected between 18 January 2012 and 31 January 2013. The maximum upstream receiving water fluoride concentration was an estimated concentration of 0.064 mg/L (minimum MDL 0.01 mg/L, minimum RL 0.1 mg/L) based on 13 samples collected between 20 October 2011 and 31 January 2013. Therefore, fluoride in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal of 1.0 mg/L, and the effluent limitation for fluoride has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

vi. **Iron**

(a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for iron is 300 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply. WDRs Order R5-2008-0057 established an effluent limitation for iron based on the Secondary MCL.

(b) **RPA Results**. For priority pollutants, the SIP dictates the procedures for conducting the RPA. Iron is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to

the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average iron concentrations.

The maximum annual average effluent concentration for iron was 31 µg/L based on 11 samples collected between 18 January 2012 and 31 January 2013. Although the receiving water contains iron exceeding the Secondary MCL, the effluent iron is consistently less than the concentrations in the receiving water and below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of iron. Since the discharge does not demonstrate reasonable potential, the effluent limitation for iron has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

vii. **Lead**

(a) **WQO.** The CTR includes hardness-depended criteria for the protection of freshwater aquatic life for lead. These criteria for lead are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used for the receiving water and effluent. WDRs Order R5-2008-0057 established effluent limitations for lead based on the CTR aquatic life criteria.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as lead. The RPA was conducted using the upstream receiving water hardness to calculate the criteria for comparison to the maximum ambient background concentration, and likewise using the reasonable worst-case downstream hardness to compare the MEC. The table below shows the specific criteria used for the RPA.

Table F-10. Lead Criteria

	CTR Chronic Criteria (Total Recoverable)	CTR Acute Criteria (Total Recoverable)	Maximum Concentration	Reasonable Potential? (Y/N)
Receiving Water	1.1 µg/L[1]	29[1]	0.34 µg/L[2]	No
Effluent	4.5 µg/L[3]	117[3]	0.07 µg/L[4]	No

	CTR Chronic Criteria (Total Recoverable)	CTR Acute Criteria (Total Recoverable)	Maximum Concentration	Reasonable Potential? (Y/N)

[1] Based on lowest observed upstream receiving water hardness of 44 mg/L (as $CaCO_3$).
[2] Based on reasonable worst-case downstream hardness as described in section IV.C.2.e of this Fact Sheet.
[3] Maximum ambient background receiving water lead concentration based on 13 samples from 20 October 2011 through 31 January 2013 (minimum MDL 0.03 µg/L, minimum RL 0.25 µg/L).
[4] MEC for lead based on 11 samples from 18 January 2012 to 31 January 2013 (minimum MDL 0.03 µg/L, minimum RL 0.25 µg/L).

As shown in the table above, the MEC and the ambient background receiving water concentration do not exceed the CTR criteria. Therefore, lead in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for lead, and the effluent limitations for lead have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

viii. **Manganese**

(a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for manganese is 50 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply. WDRs Order R5-2008-0057 established an effluent limitation for manganese based on the Secondary MCL.

(b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Manganese is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average manganese concentrations.

The maximum observed annual average effluent concentration for manganese was 11 µg/L based on 12 samples collected between 18 January 2012 and 31 January 2013. Although the receiving water contains manganese exceeding the Secondary MCL, the effluent manganese is consistently less than the concentrations in the receiving water and below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of manganese. Since the discharge does not demonstrate reasonable potential, the effluent limitation for manganese has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

ix. **Methylene Blue Active Substances (MBAS)**

(a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for MBAS is 0.5 mg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply. WDRs Order R5-2008-0057 established an effluent limitation for MBAS based on the Secondary MCL.

(b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. MBAS is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance

with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average MBAS concentrations.

The maximum observed annual average effluent concentration for MBAS was 0.059 µg/L based on 11 samples collected between 18 January 2012 and 31 January 2013. Although the receiving water contains MBAS exceeding the Secondary MCL, the effluent MBAS is consistently less than the concentrations in the receiving water and below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of MBAS. Since the discharge does not demonstrate reasonable potential, the effluent limitation for MBAS has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

x. **Oil and Grease**

(a) **WQO.** The Basin Plan contains a narrative oil and grease objective which states, "*Waters shall not contain oils, greases, waxes, or other materials in such concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses*." WDRs Order R5-2008-0057 contained an AMEL and maximum daily effluent limitation (MDEL) of 10 mg/L and 15 mg/L, respectively, to implement the narrative oil and grease objective.

(b) **RPA Results.** Oil and grease was detected at concentrations below the AMEL and MDEL, with an MEC of 1.4 mg/L (minimum MDL 1.4 mg/L, minimum RL 5 mg/L) based on nine samples. Oil and grease used to be a problem at many POTWs and effluent limitations were necessary to protect the treatment plant and receiving waters. The Discharger is required to be covered under State Water Board Order 2006-003, a Statewide General WDR for Sanitary Sewer Systems, which requires each enrollee to evaluate its service area to determine whether a fats, oils, and grease (FOG) control program is needed. If an enrollee determines that a FOG control program is not needed, the enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. The Discharger's compliance with the requirements of WQO 2006-003 will ensure minimal amounts of oil and grease are discharged into the Facility. Furthermore, the Discharger uses a tertiary treatment system with should also ensure that oil and grease is not discharged at concentrations that will cause or contribute to an exceedance of the narrative water quality objective. Based on monitoring data and the requirement to be covered under WQO 2006-003, the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan water quality objective for oil and grease and the effluent limitations for oil and grease have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

xi. **Pesticides**

(a) **WQO.** The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentration in bottom sediments or aquatic life that adversely affect beneficial uses; persistent chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations, and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide non-detect objective has been interpreted to be equal to the reporting level for purposes of determination of reasonable potential for these non-CTR pesticides, which do not have Minimum Levels specified in Appendix 4 of the SIP. Several non-CTR pesticides were detected, but not quantified, in the effluent and receiving water. The applicable Primary MCLs and NAWQC human health criteria for these pesticides is summarized below.

Table F-11. Water Quality Criteria for Detected Pesticides

Pollutant	Criteria µg/L
2,4-D	70 (Primary MCL)
Bentazon	18 (Primary MCL)
Dinoseb	7.0 (Primary MCL)
Oxamyl	50 (Primary MCL)
Picloram	500 (Primary MCL)
Silvex	10 (NAWQC HH)

(b) **RPA Results.** As shown in the following table, several non-CTR pesticides were detected but not quantified at estimated concentrations below the applicable reporting levels.

Table F-12. Pesticides Detected in the Effluent

Pollutant	Date	Monitoring Location	Concentration	MDL	RL	RP?
			µg/L	µg/L	µg/L	
2,4-D	5 December 2011	RSW-001	0.052 J	0.03	0.1	No
	20 June 2012	RSW-001	0.058 J			No
Bentazon	18 January 2012	EFF-001	0.38 J	0.06	0.5	No
	11 July 2012	EFF-001	0.12 J			No
Dinoseb	5 December 2011	RSW-001	0.029 J	0.02	0.2	No
Oxamyl	19 April 2012	EFF-001	0.41 J	0.2	0.5	No
Picloram	18 January 2012	EFF-001	0.073 J	0.02	0.1	No
Silvex	18 January 2012	EFF-001	0.17 J	0.02	0.2	No

Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining reasonable potential. Due to these samples having detectable values and the detected values being “not quantifiable” by the laboratory performing the analysis, the Central Valley Water Board finds that these non-CTR pesticides in the discharge do not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan’s objective. However, this Order does require monitoring for these constituents quarterly during the third

year of the permit term as part of the Effluent and Receiving Water Characterization Study required in Attachment H.

xii. **Settleable Solids**

(a) **WQO.** For inland surface waters, the Basin Plan states that "[w]*ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance of adversely affects beneficial uses.*" Order R5-2008-0057 established an AMEL of 0.1 ml/L and MDEL of 0.2 ml/L for settleable solids to implement the narrative settleable solids objective.

(b) **RPA Results.** Settleable solids were not detected in the effluent based on seven samples collected between 18 January 2012 and 31 January 2013. Because settleable solids have not been detected in the effluent and because the Discharger provides tertiary treatment, the discharge from the Facility does not have a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids and the effluent limitations for settleable solids have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

xiii. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs for electrical conductivity (EC), total dissolved solids (TDS), sulfate, and chloride for protection of MUN beneficial use. In addition, the Basin Plan contains numeric site-specific water quality objectives for EC and chloride for the San Joaquin River in the vicinity of the discharge. The site-specific objectives for EC are for the protection of the AGR beneficial use and fish and wildlife beneficial uses. The site-specific objectives for chloride are for protection of the MUN beneficial use. In addition, USEPA has developed National Ambient Water Quality Criteria for chloride for the protection of freshwater aquatic life.

Table F-13. Salinity Water Quality Criteria/Objectives

Parameter	Secondary MCL[1]	Bay-Delta Plan[2]	USEPA NAWQC	Effluent	
				Average	Maximum
Electrical Conductivity (µmhos/cm)	900, 1600, 2200	440 - 2200	N/A	1,016	1216
Total Dissolved Solids (mg/L)	500, 1000, 1500	--	N/A	605	730
Sulfate (mg/L)	250, 500, 600	--	N/A	92	110
Chloride (mg/L)	250, 500, 600	150	860 1-hr 230 4-day	199	640

[1] The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.
[2] The Bay-Delta Plan includes water quality objectives for EC in the SJR at Jersey Point (see Table F-15, below) and for chloride at the Antioch Water Works Intake (see Table F-14, below).

(1) **Chloride.** The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

The Basin Plan contains site-specific water quality objectives for chloride in the SJR at the Antioch Water Works Intake based on the 2006 Bay-Delta Plan, described as follows:

The maximum mean daily chloride concentrations of 150 mg/L for at least the number of days shown during the calendar year. Must be provided in intervals of not less than 2 weeks duration (Percentage of Calendar Year shown in parentheses).

Table F-14. Water Quality Objectives for Chloride

Year Type	No. Days Each Calendar Year <150 mg/L Cl^-
Wet	240 (66%)
Above Normal	190 (52%)
Below Normal	175 (48%)
Dry	165 (45%)
Critical	155 (42%)

(2) **Electrical Conductivity.** The Secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum.

The Basin Plan contains site-specific water quality objectives for electrical conductivity for the San Joaquin River at Jersey Point based on the 2006 Bay-Delta Plan. The water quality objective is at times 450 µmhos/cm for protection of agricultural use and 440 µmhos/cm for protection of striped bass spawning. The electrical conductivity objectives vary depending on the water year type and are applied as 14-day running average of the mean daily electrical conductivity, as detailed in the table below:

Table F-15. Water Quality Objectives for Electrical Conductivity

Date	Water Year Type				
	Wet	Above Normal	Below Normal	Dry	Critical
1 April – 31 May	440	440	440	440	2,200
1 June – 14 June	450	450	450	1,350	2,200
15 June – 19 June	450	450	450	1,350	2,200
20 June – 15 August	450	450	740	1,350	2,200

The Bay-Delta Plan, Chapter IV – Program of Implementation, requires that the EC objectives for protection of AGR and fish and wildlife to be implemented through water rights actions. Consequently, compliance with the Bay-Delta Plan's electrical conductivity objectives is met through reservoir operations by DWR and USBR. The electrical conductivity of the San Joaquin River at Jersey Point fluctuates throughout the year, primarily based on the outflow of the river to the San Francisco Bay. An evaluation of historical compliance from 1990 to 2012 was performed and the results of the evaluation are summarized in the table below. Not considering the exceedances during the Jones Tract levee break in

June 2004, which was an unusual event, the San Joaquin River at Jersey Point has been in compliance with the objectives for all but 3 days in the last 23 years.

Table F-16. Historical Compliance with Electrical Conductivity Objectives at Jersey Point (Water Years 1990-2012)

Water Year Type	Number of Years of this Type	Number of Years with Exceedances	Year with Exceedances (number of days)	Applicable Objectives[1] (µhmos/cm)
Wet	7	0	--	450
Above Normal	4	1	2005 (3)	450
Below Normal	3	1	2004 (12)[2]	450/740
Dry	4	0	--	450/1,350
Critically Dry	5	0	--	2,200

[1] Objectives apply from April 1 through August 15 as 14-day running daily averages. Objectives change in certain water years partway through June.

[2] The Jones Tract levee break occurred on 3 June 2004, and was closed on 30 June 2004; the exceedances of criteria, 450 µmhos/cm as 14-day running averages, occurred from 10-21 June 2004.

(3) **Sulfate.** The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) **Total Dissolved Solids.** The Secondary MCL for total dissolved solids is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) **RPA Results**

(1) **Chloride.** Chloride concentrations in the effluent ranged from 140 mg/L to 640 mg/L, with an average of 199 mg/L. Background concentrations in the San Joaquin River ranged from 6.8 mg/L to 180 mg/L, with an average of 69.8 mg/L, for 13 samples collected by the Discharger.

Based on modeling by the Discharger, the maximum incremental increase of chloride caused by the discharge when the receiving water is at 150 mg/L (i.e., the most stringent Basin Plan objective) is estimated to be only 0.022 mg/L. This immeasurable increase is insignificant, therefore, the effluent does not have a reasonable potential to cause or contribute to an exceedance of the Basin Plan's site-specific objectives for chloride.

(2) **Electrical Conductivity.** A review of the Discharger's monitoring reports shows an average effluent electrical conductivity of 1,018 µmhos/cm, with a range from 910 µmhos/cm to 1,216 µmhos/cm. As discussed above, the receiving water has been consistently in compliance with the Bay-Delta objectives resulting in available assimilative capacity for consideration in the reasonable potential analysis.

Based on modeling by the Discharger, the estimated maximum incremental increase in electrical conductivity that may be caused by the discharge is 3 µmhos/cm, which is offset by a decrease in electrical conductivity due to the discharge increasing the outflow of the San Joaquin River that reduces seawater intrusion from the San

Francisco Bay. The net worst-case increase is estimated to be approximately 2 µmhos/cm. Considering the large dilution and assimilative capacity in the receiving water, the small increase in EC caused by the discharge does not result in a reasonable potential to cause or contribute to an exceedance of the objectives for EC in the receiving water.

(3) **Sulfate.** Sulfate concentrations in the effluent ranged from 81 mg/L to 110 mg/L, with an average of 92 mg/L. Background concentrations in the San Joaquin River ranged from 4.8 mg/L to 32 mg/L, with an average of 18.2 mg/L. These levels do not exceed the Secondary MCL.

(4) **Total Dissolved Solids.** The average total dissolved solids effluent concentration was 605 mg/L with concentrations ranging from 470 mg/L to 730 mg/L. For the same reasons as for EC, above, the discharge does not have reasonable potential to cause or contribute to an exceedance of the objectives for TDS in the receiving water.

(c) **WQBELs.** Although the effluent does not have a reasonable potential to cause or contribute to an in-stream excursion of the applicable water quality objectives for chloride, electrical conductivity, and total dissolved solids, effluent limits for EC are included to ensure the discharge does not increase its load of salinity to the Delta. Previous Order R5-2008-0057 included an electrical conductivity effluent limitation of 1,505 µhmos/cm as a monthly average based on the electrical conductivity concentration used in the Discharger's antidegradation analysis. Since the Facility has only been discharging for a short time, there is insufficient EC data at this time to recalculate a new performance-based effluent limit for EC. Therefore, the previous effluent limit has been carried forward.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC for electrical conductivity is 1,216 µmhos/cm, which is less than the effluent limit for EC. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, BOD_5, diazinon and chlorpyrifos, methylmercury, nitrate plus nitrite, pathogens, pH, salinity, temperature, total coliform organisms, and TSS. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

(a) **WQO.** The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found

that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the San Joaquin River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the San Joaquin River is well-documented, the recommended criteria for waters where salmonids and early life stages are present, were used.

The maximum permitted effluent pH is 8.5 as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

A chronic criterion was calculated for each day when paired temperature and pH were measured using downstream receiving water data for temperature and pH. Rolling 30-day average criteria were calculated from downstream data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The resulting 30-day CCC is 1.25 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.25 mg/L (as N), the 4-day average concentration that should not be exceeded is 3.13 mg/L (as N).

(b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, without treatment, would be harmful to fish and would violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore exists and effluent limitations are required.

Federal regulations at 40 CFR 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Ammonia is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs*

discharging to contact recreational waters)." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." With regard to POTWs, USEPA recommends that, "*POTWs should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)

Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia in concentrations that produce detrimental physiological responses to human, plant, animal, or aquatic life would violate the Basin Plan narrative toxicity objective. Although the Discharger nitrifies the discharge, inadequate or incomplete nitrification creates the potential for ammonia to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBELs are required.

(c) **WQBELs.** This Order retains the limitations from Order R5-2008-0057, which include an AMEL and MDEL for ammonia of 1.1 mg/L and 2.1 mg/L, respectively, based on the NAWQC criteria.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 0.66 mg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~ii. **Mercury and Methylmercury**~~

~~(a) **WQO.** The Basin Plan contains fish tissue objectives for all Delta waterways listed in Appendix 43 of the Basin Plan that states "…*the average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length*." The Delta Mercury Control Program contains aqueous methylmercury waste load allocations that are calculated to achieve these fish tissue objectives. Methylmercury reductions are assigned to dischargers with concentrations of methylmercury greater than 0.06 ng/L (the concentration of methylmercury in water to meet the fish tissue objective). The Facility is allocated 0.030 g/year of methylmercury, as listed in Table IV-7B of the Basin Plan.~~

~~The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, in 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion*." In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.~~

~~(b) **RPA Results.** Section 1.3 of the SIP states, "*The RWQCB shall conduct the analysis in this section for each priority pollutant with an applicable criterion or objective,* ***excluding priority pollutants for which a TMDL has been developed, to determine if a water quality-based effluent limitation is required in the discharger's permit.***" (emphasis added) Although an RPA is not required, based on the available effluent and receiving water methylmercury data, it appears the discharge is causing or contributing to an exceedance of the concentration of methylmercury in water to meet the site-specific fish tissue objectives in the Basin Plan. Methylmercury was not detected in the effluent based on one sample collected between 18 January 2012 and 31 January 2013 (MDL 0.05 ng/L). Upstream receiving water data for methylmercury is not available. The MEC for total mercury was 0.0009 µg/L based on nine samples collected between 18 January 2012 and 31 January 2013 (MDL 0.0002 µg/L, RL 0.0005 µg/L). The maximum receiving water total mercury concentration was 0.0045 µg/L based on 13 samples collected between 11 October 2011 and 31 January 2013.~~

~~(c) **WQBELs.** The Basin Plan's Delta Mercury Control Program includes wasteload allocations for POTWs in the Delta, including for the Discharger. This Order contains final WQBELs for methylmercury based on the wasteload allocation. The total calendar annual methylmercury load shall not 0.030 grams.~~

~~(d) **Plant Performance and Attainability.** Based on available effluent methylmercury data, the Central Valley Water Board finds the Discharger is unable to immediately comply with the final WQBELs for methylmercury. Therefore, a compliance schedule in accordance with the State Water Board's Compliance Schedule Policy and the Delta Mercury Control Program has been established in this Order.~~

~~iii.~~ii. **Nitrate and Nitrite**

(a) **WQO.** DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate plus nitrite, measured as nitrogen.

U.S. EPA has developed a Primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, if untreated, will be harmful to fish and will violate the Basin Plan's narrative toxicity objective. This Order, therefore, requires removal of ammonia (i.e., nitrification). Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the Primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the Primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia). Reasonable potential for nitrate and nitrite therefore exists and WQBELs are required.

Federal regulations at 40 CFR 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Nitrate and nitrite are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." With regard to POTWS, USEPA recommends that, "*POTWs should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger

currently uses nitrification/denitrification to remove ammonia, nitrite, and nitrate from the waste stream. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan narrative chemical constituents objective. Although the Discharger denitrifies the discharge, inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBELs are required.

(c) **WQBELs.** This Order contains a final AMEL for nitrate plus nitrite of 10 mg/L (total as N), based on the Primary MCL. This effluent limitation is included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

(d) **Plant Attainability.** The Facility was designed to provide complete nitrification and denitrification. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~iv.~~iii. **Pathogens**

(a) **WQO.** DPH has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL, at any time.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "…*an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities*." Title 22 is not directly applicable to surface waters; however, the Central Valley Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by the DPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under CWC Section 13050 if

discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBELs are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." (TSD, p. 50)

The beneficial uses of the San Joaquin River include municipal and domestic supply, water contact recreation, and agricultural irrigation supply. Typically, the Central Valley Water Board requires Title 22 or equivalent tertiary treatment when there is less than 20:1 dilution, based on recommendations by DPH. However, as discussed above in section IV.C.2.c of this Fact Sheet, the discharge has at least 20:1 dilution at all times. Although there is 20:1 dilution, tertiary level treatment is required based on the following:

(1) The Discharger developed its EIR and antidegradation analysis based on a Title 22 or equivalent tertiary treatment facility.

(2) There are four water intakes within 10 miles of the discharge. Therefore, providing a high level of disinfection is appropriate to protect the MUN beneficial use.

(3) This was a new discharge to the Delta. With the significant pelagic decline, the fragile nature of the Delta, unknown Delta stressors and recent legal decisions on water supply diversions for the Delta, it is prudent to require a high level of treatment for new discharges.

To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

(c) **WQBELs.** In accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum.

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 0.2 nephelometric turbidity units (NTU) as a daily average when membrane filtration is used. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DPH recommended Title 22 disinfection criteria, weekly average specifications are impracticable for turbidity. This Order includes operational specifications for turbidity of 0.2 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period and 0.5 NTU at any time.

Final WQBELs for BOD_5 and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD_5 and TSS of 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

This Order contains effluent limitations for total coliform organisms, BOD_5, and TSS; operating specifications for turbidity; and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements.

(d) **Plant Performance and Attainability.** The Facility provides tertiary treatment using membrane filtration and UV disinfection. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~v.~~iv. **pH**

(a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan's numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBELs are required.

Federal regulations at 40 CFR §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Based on 463 samples taken from 18 January 2012 to 31 January 2013, the maximum pH reported was 7.9 and the minimum was 6.6. Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or

contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

(c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the range of the pH concentration in the effluent is 6.6 – 7.9, which is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~vi.~~v. **Temperature**

(a) **WQO.** The Thermal Plan requires that, "*The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F*."

(b) **RPA Results.** Treated domestic wastewater is an elevated temperature waste, which could cause or threaten to cause the receiving water temperature to exceed temperature objectives established in the Thermal Plan. Therefore, reasonable potential exists for temperature and WQBELs are required.

Federal regulations at 40 CFR §122.44(d)(1)(i) requires that, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Temperature is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater, which is an elevated temperature waste. This provides the basis for the discharge to have a reasonable potential to cause or contribute to an excursion above Thermal Plan requirements.

(c) **WQBELs.** To ensure compliance with the Thermal Plan, an effluent limitation for temperature is included in this Order.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum effluent increase in temperature from the receiving water was 20ºF on 14 January 2013. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

4. WQBEL Calculations

a. This Order includes WQBELs for ammonia, BOD_5, diazinon and chlorpyrifos, methylmercury, nitrate plus nitrite, pH, electrical conductivity, total coliform organisms, and TSS. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below.

b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C>B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Point 001

Table F-13. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day at 25ºC)	mg/L	10	15	20	--	--
	lbs/day[1]	359	537	717	--	--
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	359	537	717	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	1.1	--	2.1	--	--
	lbs/day[1]	39.4	--	75.3	--	--
Diazinon and Chlorpyrifos	µg/L	[2]	--	[3]	--	--
Electrical Conductivity @ 25ºC	µmhos/cm	1,505	--	--	--	--
Methylmercury	grams/year	0.030[4]	--	--	--	--
Nitrate plus Nitrite (as N)	mg/L	10	--	--	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Coliform Organisms	MPN/100 mL	--	2.2[5]	23[6]	--	240
Temperature	ºF	--	--	--	--	20[7]

[1] Based on an average dry weather flow of 4.3 MGD.

[2] Average Monthly Effluent Limitation

$$S_{avg} = \frac{C_{D_avg}}{0.079} + \frac{C_{C_avg}}{0.012} \leq 1.0$$

$C_{D\ avg}$ = average monthly diazinon effluent concentration in µg/L

$C_{C\ avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

[3] Maximum Daily Effluent Limitation

$$S_{max} = \frac{C_{D_max}}{0.16} + \frac{C_{C_max}}{0.025} \leq 1.0$$

$C_{D\ avg}$ = maximum daily diazinon effluent concentration in µg/L

$C_{C\ avg}$ = maximum daily chlorpyrifos effluent concentration in µg/L

[4] The total calendar annual load of methylmercury shall not exceed 0.030 grams.

[5] Applied as a 7-day median effluent limitation.

[6] Not to be exceeded more than once in any 30-day period.

[7] The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20ºF.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00). The Basin Plan also states that, "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate*…".

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA . USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" Although the discharge has been consistently in compliance with the acute effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other

acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, *"In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc."* Consistent with Order R5-2008-0057, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay ---------- 70%
Median for any three consecutive bioassays ---------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00). Based on chronic WET testing performed by the Discharger from 28 November 2011 through 18 June 2012, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective, as shown in Table F-14 below. As discussed in the ROWD, the Discharger exceeded the numeric trigger of 16 TUc on 12 March 2012 for *Selenastrum capricornutum* growth. The first accelerated monitoring sample on 9 April 2012 also exceeded the monitoring trigger. The TRE investigation concluded that receiving water samples were observed to be substantially biostimulatory relative to the lab control; however, the undiluted final effluent was not inhibitive, indicating that the significant effects shown in the serial dilutions were related to the biostimulatory receiving water. The Discharger submitted the final report, Toxicity Reduction Evaluation for *S. capricornutum* in July 2012. This Order requires the chronic WET testing be performed using lab control water as the diluent.

Table F-14. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow		Water Flea		Green Algae
	Pimephales promelas		*Ceriodaphnia dubia*		*Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
28 November 2011	1	1	1	1	1
12 December 2011	1	1	1	1	1
9 January 2012	1	1	1	1	1
13 February 2012	1	1	1	1	1
12 March 2012	1	1	1	1	32
9 April 2012	1	1	1	1	32
27 April 2012	--	--	--	--	5
7 May 2012	1	1	1	1	1[1]

Date	Fathead Minnow		Water Flea		Green Algae
	Pimephales promelas		*Ceriodaphnia dubia*		*Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
21 May 2012	--	--	--	--	1[1]
4 June 2012	--	--	--	--	1[1]
18 June 2012	--	--	--	--	1[1]

[1] Not a statistically significant ($p<0.05$) reduction relative to laboratory control. Receiving water control was hyper-stimulatory.

Dilution has been granted for the chronic condition. Chronic toxicity testing results exceeding 16 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Because the March and April 2012 exceedances were found to be a result of the biostimulatory nature of the receiving water which was used as the control, these results were not used for the RPA for chronic toxicity. No effluent toxicity was observed in the remaining three-species toxicity testing events. Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective with regards to chronic toxicity.

The Monitoring and Reporting Program of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. The Special Provision in section VI.C.2.a of the Order includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a TRE in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia, BOD_5, and TSS because they are oxygen demanding substances. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1. of this Order.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a MDEL in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order uses MDELs in lieu of average weekly effluent limitations for ammonia, as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD_5, pH, and TSS, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for aluminum, chlorine residual, copper, fluoride, iron, lead, manganese, MBAS, oil and grease, settleable solids, and electrical conductivity. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0057. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) specifies that, in the case of effluent imitations established on the basis of CWA section 301(b)(1)(C) (i.e., WQBELs), a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with CWA section 303(d)(4). The effluent limitations for aluminum, chlorine residual, copper, fluoride, iron, lead, manganese, MBAS, oil and grease, and settleable solids established in Order R5-2008-0057 are WQBELs and may be relaxed if the requirements of CWA section 303(d)(4) are satisfied.

CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy. The 303(d) listings for the San Joaquin River within the Sacramento-San Joaquin Delta, as described in section III.D.1 of this Fact Sheet, do not include aluminum, chlorine residual, copper, fluoride, iron, lead, manganese, MBAS, oil and grease, or settleable solids. As discussed in section IV.D.4, the removal or relaxation of WQBELs for these pollutants is consistent with the antidegradation

provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2008-0057 was issued indicates that aluminum, chlorine residual, copper, fluoride, iron, lead, manganese, MBAS, oil and grease, settleable solids, and electrical conductivity do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the removal of effluent limitations for these constituents includes the following:

i. **Aluminum**. As discussed in Section IV.C.3 of the Fact Sheet, based on new aluminum toxicity studies developed by other dischargers in the Delta, the Central Valley Water Board finds that based on site-specific conditions of the San Joaquin River, the chronic criterion (87 µg/L) recommended in U.S. EPA's NAWQC for aluminum is not applicable and applied the acute criterion (750 µg/L) to interpret the Basin Plan's narrative toxicity objective. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for aluminum were based on influent data. Effluent monitoring data collected from the new Facility between 18 January 2012 and 31 January 2013 indicates that aluminum in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the applicable criteria.

ii. **Chlorine Residual**. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Additionally, the Discharger converted from chlorine disinfection to UV disinfection at the new Facility, which began discharging in October 2011.

iii. **Copper**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for copper were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013 and upstream receiving water data collected between 20 October 2011 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria or the Basin Plan objective for copper.

iv. **Fluoride**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for fluoride were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013 and receiving water data collected between 20 October 2011 and 31 January 2013, the discharge does not exhibit reasonable potential to

cause or contribute to an exceedance of the agricultural water quality goal for fluoride.

v. **Iron**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for iron were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

vi. **Lead**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for lead were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013 and upstream receiving water data collected between 20 October 2011 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria.

vii. **Manganese**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for manganese were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

viii. **MBAS**. Effluent data was not available at the time Order R5-2008-0057 was adopted as the Discharger had not completed construction of the new Facility and effluent limitations for MBAS were based on influent data. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

ix. **Oil and Grease**. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative objective. The effluent has been below the effluent limitations contained in Order R5-2008-0057, the Discharger's compliance with the requirements of WQO 2006-0003 will ensure minimal amounts of oil and grease are discharged into the Facility, and the Facility provides tertiary filtration which produces high quality effluent with low concentrations of oil and grease.

x. **Settleable Solids**. Based on effluent monitoring data collected between 18 January 2012 and 31 January 2013, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative objective.

xi. **Electrical Conductivity**. As discussed in Section IV.C.3.b.xiii of the Fact Sheet, the discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of the Basin Plan's site-specific objectives for EC in the receiving water.

Thus, removal and relaxation of the effluent limitations for aluminum, chlorine residual, copper, fluoride, iron, lead, manganese, MBAS, oil and grease, settleable solids, and electrical conductivity from Order R5-2008-0057 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal or relaxation of effluent

limitations based on information that was not available at the time of permit issuance.

c. **Turbidity.** Order R5-2008-0047 contained effluent limitations for turbidity. The prior limitations were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for solids and coliform. The prior effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a WQBEL.

This Order contains operational turbidity specifications to be met in lieu of effluent limitations. The revised Order does not include effluent limitations for turbidity. However, the performance-based specification in this Order is an equivalent limit that is more stringent, and therefore does not constitute backsliding.

The revised operational specifications for turbidity are more stringent than the effluent limitations in Order R5-2008-0047. These revisions are consistent with State regulations implementing recycled water requirements. The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than Order R5-2008-0047 and therefore does not allow degradation.

4. Antidegradation Policies

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The Central Valley Water Board finds that the removal of the effluent limitations does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow. Restrictions on pollutants are discussed in IV.C of the Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are not more stringent than required by the CWA.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved

pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 131.38. The procedures for calculating the individual WQBELs for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for total coliform organisms that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in section IV.C.3 of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-15. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Average Dry Weather Flow	MGD	~~--~~4.3[10]	--	~~4.3~~--	--	--	DC
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20ºC)	mg/L	10	15	20	--	--	TTC
	lbs/day	359	537	717	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP
Total Suspended Solids	mg/L	10	15	20	--	--	TTC
	lbs/day	359	537	717	--	--	
	% Removal	85	--	--	--	--	CFR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	1.1	--	2.1	--	--	NAW QC
	lbs/day	39.4	--	75.3	--	--	
Diazinon and Chlorpyrifos	µg/L	[2]	--	[3]	--	--	TMDL
Electrical Conductivity @ 25ºC	µmhos/cm	1,505	--	--	--	--	AD
Methylmercury	grams/year	0.030[4]	--	--	--	--	TMDL
Nitrate Plus Nitrite (as N)	mg/L	10	--	--	--	--	MCL

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Temperature	ºF	--	--	--	--	20[6]	TP
Total Coliform Organisms	MPN/ 100 mL	--	2.2[6]	23[7]	--	240	Title 22
Acute Toxicity	% Survival	70[8]/90[9]	--	--	--	--	BP

[1] DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
TMDL – Based on the applicable TMDL.
BDP – Based on the Bay – Delta Plan.
MCL – Based on the Primary Maximum Contaminant Level.
TP – Based on the Thermal Plan.
Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
AD – Antidegradation Policy

[2] Average Monthly Effluent Limitation

$$S_{avg} = \frac{C_{D\text{-}avg}}{0.079} + \frac{C_{C\text{-}avg}}{0.012} \leq 1.0$$

$C_{D\ avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\ avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

[3] Maximum Daily Effluent Limitation

$$S_{max} = \frac{C_{D\text{-}max}}{0.16} + \frac{C_{C\text{-}max}}{0.025} \leq 1.0$$

$C_{D\ avg}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\ avg}$ = maximum daily chlorpyrifos effluent concentration in µg/L

[4] The total calendar annual load of methylmercury shall not exceed 0.030 grams.

[5] The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20ºF.

[6] Applied as a 7-day median effluent limitation.

[7] Not to be exceeded more than once in any 30-day period.

[8] 70% minimum of any one bioassay.

[9] 90% median for any three consecutive bioassays.

[10] Compliance with the average dry weather flow effluent limitations will be determined annually based on the average monthly flow over three consecutive dry weather months (e.g., July, August, and September).

E. Interim Effluent Limitations

1. **Compliance Schedule for Methylmercury.** This Order contains a new final effluent limitation for methylmercury based on the new objective that became effective on 20 October 2011. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for methylmercury is established in this Order.

   A compliance schedule is necessary because the Discharger must implement actions, including a Phase 1 Methylmercury Control Study and possible upgrades to the Facility to comply with final effluent limitations.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts. The Discharger is currently implementing a PPP for mercury that was submitted to the Central Valley Water Board on 8 December 2009.

The compliance schedule is as short as possible. The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. Therefore, at this time it is uncertain what measures must be taken to consistently comply with the waste load allocation for methylmercury. The interim effluent limits and final compliance date may be modified at the completion of Phase 1.

Interim performance-based limitations have been established in this Order in accordance with the Delta Mercury Control Program. The interim limitations were determined as described in section IV.E.2., below, and are in effect through until the final limitations take effect.

2. **Interim Limits for Total Mercury.** During Phase 1, the Delta Mercury Control Program requires POTWs to limit their discharges of inorganic (total) mercury to facility performance-based levels. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of 12-month running effluent inorganic (total) mercury loads (lbs/year). At the end of Phase 1, the interim inorganic (total) mercury mass limit will be re-evaluated and modified as appropriate.

   The interim limitations for total mercury in this Order are based on the current treatment plant performance. In developing the interim limitation, when there are less than 10 sampling data points available, the TSD recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of 10 data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, because there are less than 10 sampling points for the 12-month running total mercury loads, interim limitations are based on 3.11 times the ~~MEC~~ maximum observed effluent concentration to obtain the interim limitation (TSD, Table 5 2). In this case, there is limited mercury data. Therefore, the interim annual mercury loading limitation was calculated as the maximum annual effluent loading multiplied by 3.11.

   The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

   The following table summarizes the calculations of the interim effluent limitations for total mercury:

Table F-16. Interim Mercury Effluent Limitation Calculation Summary

Parameter	Units	Maximum Annual Effluent Loading	Number of Running Annual Load Calcs	Interim Limitation
Mercury, Total Recoverable	g/yr	~~0.06~~2.78	5	~~0.2~~8.65

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

   a. **pH.** Order R5-2008-0057 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan, and allowed a 1-month averaging period for calculating pH change. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

   In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the pH receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

   Ammonia is the only constituent in the discharge regulated by this Order directly related to pH. The fixed ammonia effluent limitations in this Order are based on reasonable worse-case conditions. Although ammonia criteria are based on pH, and the pH receiving water limitations are more lenient in this Order than in the previous permit, the fixed ammonia limits are developed to protect under worse-case pH conditions. Therefore the relaxation of the pH receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to

cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the pH receiving water limitation (i) is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

b. **Turbidity.** Order R5-2008-0057 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

This Order includes operational specifications that require the Discharger to operate the treatment system to insure that turbidity shall not exceed 0.2 NTU more than 5 percent of the time within a 24 hour period and 0.5 NTU at any time. Because this Order limits the discharge of turbidity to 0.2 NTU, the Order will be protective of the receiving water under all natural background conditions as defined in the Basin Plan’s revised water quality objective for turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the turbidity receiving water limitation is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water

quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

B. Groundwater – Not Applicable

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 CFR establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 CFR allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** The Delta Mercury Control Program was designed to proceed in two phases. Phase 1 spans a period of approximately nine years. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage

analysis, fish tissue objectives, allocations, and time schedules may be adjusted at the end of Phase 1, or subsequent program reviews, as appropriate. Therefore, this Order may be reopened to address changes to the Delta Mercury Control Program.

b. **Pollution Prevention.** This Order requires the Discharger prepare pollution prevention plans following Water Code section 13263.3(d)(3) for mercury. This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for mercury based on a review of the pollution prevention plans.

c. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a TRE. This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

d. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

e. **Regional Monitoring Program.** The Central Valley Water Board is developing a Regional Monitoring Program for the Sacramento-San Joaquin Delta. This Order may be reopened to modify the monitoring requirements to implement the Regional Monitoring Program.

Drinking Water Policy. On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board will consider adoption of the Drinking Water Policy at a future meeting. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

f. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide a chlorpyrifos and diazinon effluent limitation exemption if a discharger can demonstrate that diazinon and chlorpyrifos have not been detected in the effluent. The proposed Basin Plan Amendment may result in needed changes to the diazinon and chlorpyrifos requirements in this Order. As discussed in the RPA for diazinon and chlorpyrifos, there have been no detectable results for these constituents. Therefore, this Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) As described further in section IV.C.5.b of this Fact Sheet, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 16 TUc (where TUc = 100/NOEC) is applied in the provision. Therefore, a TRE is triggered when the effluent exhibits toxicity at 6.25% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e., toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

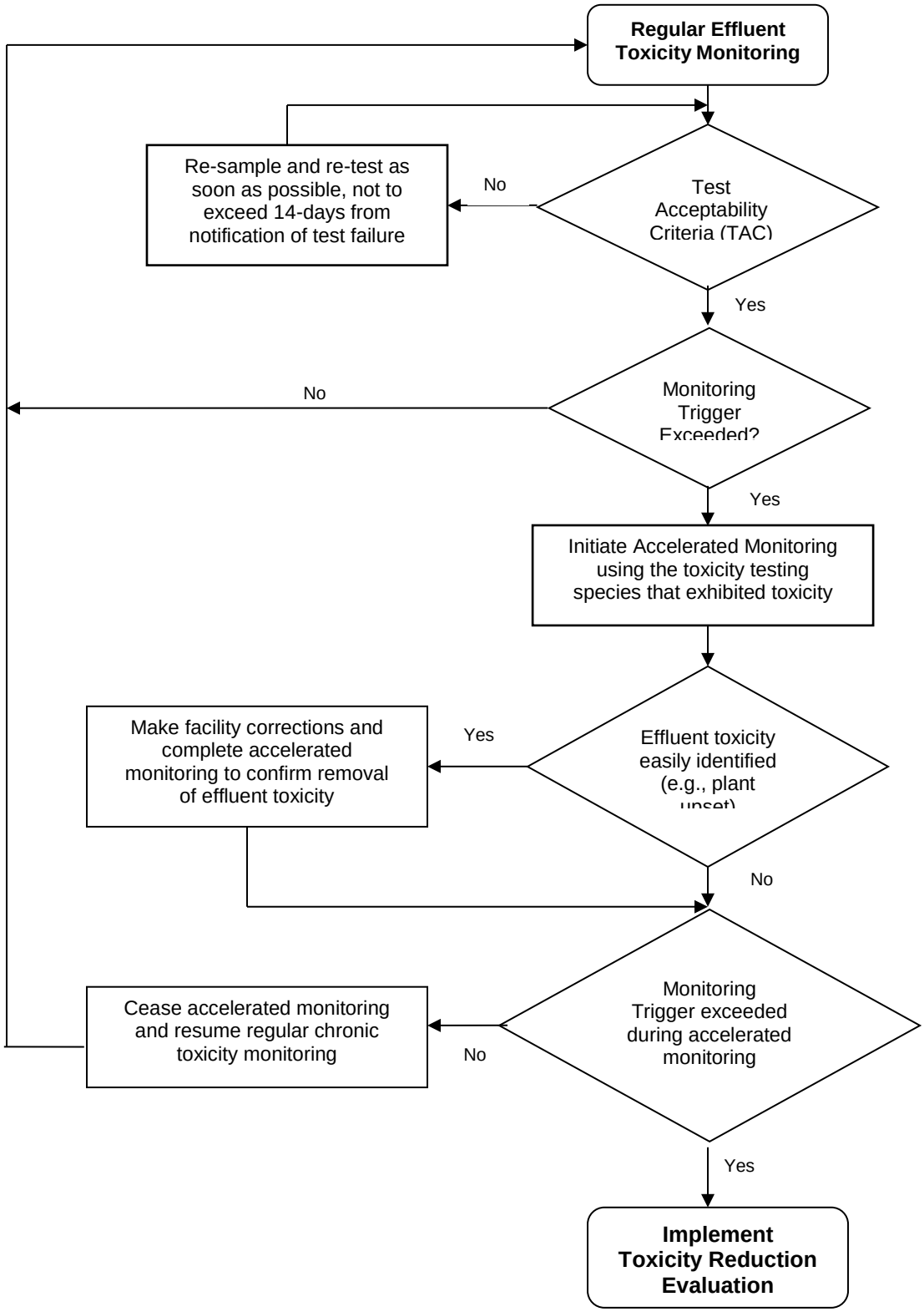
See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, EPA/833-B-99/002, August 1999.
- *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs)*, EPA/600/2-88/070, April 1989.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition*, EPA 600/6-91/003, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA/600/6-91/005F, May 1992.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition*, EPA/600/R-92/080, September 1993.

- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition*, EPA 600/R-92/081, September 1993.
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition*, EPA-821-R-02-012, October 2002.
- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA-821-R-02-013, October 2002.
- *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



b. **Methylmercury Control Study.** The Basin Plan's Delta Mercury Control Program requires NPDES dischargers, working with other stakeholders, to conduct methylmercury control studies (Control Studies) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve their methylmercury load and waste load allocations. Control Studies can be developed through a stakeholder group approach or other collaborative mechanism, or by individual dischargers. By letter dated 16 April 2012, the Discharger agreed to participate in the Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study (Study).

The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. The objective of the Control Studies is to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve the methylmercury load and waste load allocation. In accordance with the Delta Mercury Control Plan, a work plan was submitted on **20 April 2013** by the Central Valley Clean Water Association on behalf of a group of POTWs in the region. The Central Valley Water Board commits to supporting an Adaptive Management approach. The adaptive management approach includes the formation of a Stakeholder Group(s) and a Technical Advisory Committee (TAC).

The study work plan will be reviewed and approval by the TAC and subsequently approved by the Executive Officer. The Discharge shall immediately implement the work plan upon Executive Officer approval, and a progress report shall be submitted by **20 October 2015.**

The Study shall evaluate the feasibility of reducing sources more than the minimum amount needed to achieve the methylmercury allocation. The Study also may include an evaluation of innovative actions, watershed approaches, offsets projects, and other short and long-term actions that result in reducing inorganic (total) mercury and methylmercury to address the accumulation of methylmercury in fish tissue and to reduce methylmercury exposure. The Study may evaluate the effectiveness of using inorganic (total) mercury controls to control methylmercury discharges.

The Study shall include a description of methylmercury and/or inorganic (total) mercury management practices identified in Phase 1; an evaluation of the effectiveness, and costs, potential environmental effects, and overall feasibility of the control actions. The Study shall also include proposed implementation plans and schedules to comply with methylmercury allocations as soon as possible. The Study shall be submitted by **20 October 2018.**

The Executive Officer may authorize extending the Study due date. The Executive Officer may, after public notice, extend the due date up to 2 years if the Discharger demonstrates it is making significant progress towards developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for Mercury.** The Basin Plan's Delta Mercury Control Plan requires NPDES permitted facilities to submit and implement pollutant minimization programs for mercury. The Discharger submitted a PPP for mercury dated 8 December 2009. The Discharger shall update and implement the PPP for

mercury in accordance with Water Code section 13263.3(d)(3), per the compliance schedule in this Order for methylmercury (Section VI.C.7.a). The minimum requirements for the pollution prevention plan are outlined below. Progress reports shall be submitted annually in accordance with the Monitoring and Reporting Program *(*Attachment E section X.D.1*.)*. The progress reports shall discuss the effectiveness of the PPP in the reduction of mercury in the discharge, include a summary of mercury and methylmercury monitoring results, and discuss updates to the PPP. The minimum requirements for the PPP include the following:

i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

iv. A plan for monitoring the results of the pollution prevention program.

v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

vii. A description of the Discharger's existing pollution prevention programs.

viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

b. **Mercury Exposure Reduction Program.** The Basin Plan's Delta Mercury Control Program requires dischargers to participate in a Mercury Exposure Reduction Program. The Exposure Reduction Program is needed to address public health impacts of mercury in Delta fish, including activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.

The Exposure Reduction Program must include elements directed toward:

- Developing and implementing community-driven activities to reduce mercury exposure;

- Raising awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;

- Integrating community-based organizations that serve Delta fish consumers, Delta fish consumers, tribes, and public health agencies in the design and implementation of an exposure reduction program;

- Identifying resources, as needed, for community-based organizations and tribes to participate in the Program;

- Utilizing and expanding upon existing programs and materials or activities in place to reduce mercury, and as needed, create new materials or activities; and

- Developing measures for program effectiveness.

This Order requires the Discharger participate in a Mercury Exposure Reduction Program (MERP) in accordance with the Delta Mercury Control Program. By letter dated 2 May 2013, ~~T~~the Discharger~~, either individually or collectively~~ elected to provide financial support in the collective MERP with other Delta dischargers, rather than be individually responsible for any MERP activities. ~~shall submit an exposure reduction work plan for Executive Officer approval by **20 October 2013**.~~ The objective of the MERP~~Exposure Reduction Program~~ is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the ~~Exposure Reduction Program~~MERP objective, elements, and the Discharger's coordination with other stakeholders. The Discharger shall integrate or, at minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. The Discharger shall continue to participate in the group effort to implement the work plan ~~**within 6 months of Executive Officer Approval of the work plan**~~**.**

c. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the San Joaquin River.

4. Construction, Operation, and Maintenance Specifications

a. **Ultraviolet Light Disinfection (UV) System Operating Specifications.** This Order requires that wastewater shall be oxidized, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. To ensure that the UV disinfection system is operated to achieve the required pathogen removal, this Order includes effluent limits for total coliform organisms, and UV Disinfection System operating specifications. Compliance with total coliform effluent limits alone does not ensure that pathogens in the municipal wastewater have been deactivated by the UV disinfection system. Compliance with both the effluent limits and the UV disinfection operating specifications demonstrates compliance with the equivalency to Title 22 disinfection requirement.

The National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWRF's "*Ultraviolet Disinfection*

Guidelines for Drinking Water and Water Reuse", first published in December 2000 and revised as a Second Edition dated May 2003 (NWRI guidelines), includes UV operating specifications for compliance with Title 22 disinfected tertiary recycled water. For water recycling in accordance with Title 22, UV systems shall be approved systems included in the Treatment Technology Report for Recycled Water, December 2009 (or a later version, as applicable) published by the DPH. UV systems shall also conform to all requirements and operating specifications of the NWRI guidelines. A Memorandum dated 1 November 2004 issued by DPH to Regional Water Board executive offices recommended that provisions be included in permits for water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency of lamp sleeves, as well as, include provisions that specify minimum delivered UV dose that must be maintained (per the NWRI Guidelines).

UV System operating specifications are required to ensure that the UV system is operated to achieve the required pathogen removal. UV disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses and bacteria) in the wastewater. The Discharger conducted a UV Check Point Bioassay Study to evaluate the appropriate UV dose and UV transmittance for the Facility. DPH approved the study results by letter dated 16 July 2012. This Order includes operating specifications for a minimum hourly average UV dose of 80 mJ/cm^2 and a minimum hourly UV transmittance of 55% per the Discharger's site-specific study to ensure the virus inactivation equivalent to Title 22 disinfected tertiary recycled water.

Turbidity is also included as an operational specification as an indicator of the effectiveness of the treatment process and to assure the membrane filtration system is operated properly to achieve the required level of disinfection. The tertiary treatment process utilized at this Facility includes membrane filtration that is capable of reliably meeting a turbidity limitation of 0.2 nephelometric turbidity units (NTU) at least 95% of the time. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity and could impact UV dosage. Turbidity has a major advantage for monitoring membrane performance, allowing immediate detection of membrane failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 0.2 NTU more than 5 percent of the time and a daily maximum of 0.5 NTU.

Minimum UV dosage, UV transmittance, and turbidity specifications are included as operating criteria in section VI.C.4.a. of this Order and section IX.C of the Monitoring and Reporting Program (Attachment E) includes monitoring requirements to ensure that adequate disinfection of wastewater is achieved.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The Monitoring and Reporting Requirements for the General Order were amended by Water Quality Order WQ 2008-0002-EXEC on 20 February 2008. The General Order requires public agencies that own or operate sanitary sewer systems with greater than 1 mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer

management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by 1 December 2006.

6. Other Special Provisions

a. **Title 22, or Equivalent, Disinfection Requirements.** To protect public health and safety, wastewater discharged to San Joaquin River shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

7. Compliance Schedules

a. **Compliance Schedule for Methylmercury.** The State Water Board adopted the *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution 2008-0025), which is the governing Policy for compliance schedules in NPDES permits (hereafter "Compliance Schedule Policy"). In accordance with the Compliance Schedule Policy and 40 CFR 122.47, a discharger who seeks a compliance schedule must demonstrate additional time is necessary to implement actions to comply with a more stringent permit limitation. The Discharger must provide the following documentation as part of the application requirements:

i. Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;

ii. Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have established;

iii. A proposed schedule for additional source control measures or waste treatment;

iv. Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim, permit effluent limit to apply if a schedule of compliance is granted;

v. The highest discharge quality that can reasonably be achieved until final compliance is attained;

vi. The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs; and

vii. Additional information and analyses to be determined by the Regional Water Board on a case-by-case basis

Based on information submitted with the Report of Waste Discharge, self-monitoring reports, pollution prevention plans, and other miscellaneous submittals, it has been demonstrated to the satisfaction of the Central Valley Water Board that the Discharger needs time to implement actions to comply with the new effluent limitations for methylmercury.

The Delta Mercury Control Program is composed of two phases. Phase 1 spans from 20 October 2011 through the Phase I Delta Mercury Control Program Review, expected to conclude by October 2020. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. Phase 1 includes provisions for: implementing pollution minimization programs and interim mass limits for inorganic (total) mercury point sources in the Delta and Yolo Bypass; controlling sediment-bound mercury in the Delta and Yolo Bypass that may become methylated in agricultural lands, wetland, and open-water habitats; and reducing total mercury loading to San Francisco Bay, as required by the Water Quality Control Plan for the San Francisco Bay Basin.

At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The review also will consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.

Phase 2 begins after the Phase 1 Delta Mercury Control Program Review or by 20 October 2022, whichever occurs first, and ends in 2030. During Phase 2, dischargers shall implement methylmercury control programs and continue inorganic (total) mercury reduction programs. Compliance monitoring and implementation of upstream control programs also shall occur in Phase 2. Any compliance schedule contained in an NPDES permit must be "…*an enforceable sequence of actions or operations leading to compliance with an effluent limitation…*" per the definition of a compliance schedule in CWA Section 502(17). *See also* 40 CFR 122.2 (definition of schedule of compliance). The compliance schedule for methylmercury meets these requirements.

Federal Regulations at 40 CFR 122.47(a)(1) requires that, "*Any schedules of compliance under this section shall require compliance as soon as possible*…" The Compliance Schedule Policy also requires that compliance schedules are as short as possible and may not exceed 10 years, except when *"…a permit limitation that implements or is consistent with the waste load allocations specified in a TMDL that is established through a Basin Plan amendment, provided that the TMDL implementation plan contains a compliance schedule or implementation schedule.*" As discussed above, the Basin Plan's Delta Mercury Control Program includes compliance schedule provisions and allows compliance with the waste load allocations for methylmercury by 2030. Until the Phase 1 Control Studies are complete and the Central Valley Water Board conducts the Phase 1 Delta Mercury Control Program Review, it is not possible to determine the appropriate compliance

date for the Discharger that is as soon as possible. Therefore, this Order establishes a compliance schedule for the new, final, WQBELs for methylmercury with full compliance required by **31 December 2030**, which is consistent with the Final Compliance Date of the TMDL. At completion of the Phase 1 Delta Mercury Control Program Review, the final compliance date for this compliance schedule will be re-evaluated to ensure compliance is required as soon as possible. Considering the available information, the compliance schedule is as short as possible in accordance with federal regulations and the Compliance Schedule Policy.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E, establishes monitoring and reporting requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS reduction requirements). The monitoring frequency for flow (continuous) has been retained from Order R5-2008-0057. The monitoring frequencies for BOD_5, TSS, and electrical conductivity have been reduced from five times per week to weekly, which will provide sufficient information to characterize the influent. Monitoring requirements for pH and total dissolved solids have not been retained from Order R5-2008-0057 as monitoring is no longer necessary to determine compliance with permit requirements.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for flow (continuous), pH (continuous), mercury (monthly), ammonia (weekly), nitrite (monthly), temperature (continuous), and methylmercury (monthly) have been retained from Order R5-2008-0057 to determine compliance with effluent limitations, where applicable, and characterize the effluent for these parameters.
3. Monitoring data collected over the term of Order R5-2008-0057 for aluminum, copper, dissolved oxygen, lead, fluoride, iron, manganese, MBAS, oil and grease, radionuclides, settleable solids, and standard minerals did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2008-0057.
4. This Order reduces the monitoring frequency for BOD_5, TSS, and total coliform organisms from five times per week to two times per week. The Central Valley Water Board finds that this frequency will provide sufficient information to determine compliance with effluent limitations and monitor the performance of the Facility.
5. Order R5-2008-0057 required monitoring five times per week for electrical conductivity and monthly for chloride and total dissolved solids. This Order reduces the monitoring frequency for electrical conductivity to weekly, which will provide sufficient information to determine compliance with effluent limitations and monitor the performance of the

Facility. Electrical conductivity is an indicator parameter for salinity and monitoring data for electrical conductivity is expected to adequately characterize the salinity of the effluent. Therefore, this Order discontinues effluent monitoring for chloride and total dissolved solids.

6. Order R5-2008-0057 required monitoring for chlorine residual twice per day when chlorine is used for maintenance or other purposes at the Facility. In October 2011, the Discharger completed upgrades to the Facility, which included replacing chlorine disinfection with UV disinfection. Chlorine is now only used when the Discharger is cleaning the membrane filters, and during cleaning, water flow is stopped and the chlorinated water is rerouted back to the headworks for treatment before being discharged into the receiving water. Due to the Facility operational changes when chlorine is used for maintenance, this Order reduces monitoring to once per day when chlorine is used for maintenance of the membrane filters.

7. This Order includes effluent limitations for diazinon and chlorpyrifos based on the applicable TMDL for the Sacramento-San Joaquin Delta. Therefore, this Order establishes annual monitoring for diazinon and chlorpyrifos to characterize the presence in the effluent and determine compliance with the applicable effluent limitations based on the TMDL.

8. This Order establishes a new effluent limitation for nitrate plus nitrite to ensure that the Facility adequately nitrifies and denitrifies the discharge. Therefore, this Order establishes monthly monitoring nitrate plus nitrite.

9. This Order includes operational specifications for turbidity. This Order moves the point of compliance from the final effluent after disinfection to an internal compliance point prior to disinfection. Therefore, monitoring for turbidity is required at Monitoring Location UVS-001 and effluent monitoring requirements have not been retained in this Order.

10. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. This Order requires monitoring quarterly during the third year of the permit term in order to collect data to conduct an RPA for the next permit renewal. See Attachment H for more detailed requirements related to performing priority pollutant monitoring.

11. California Water Code section 13176, subdivision (a), states: *"The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code."* The DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

    Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 CFR § 136.3(e), Table II)

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2008-0057, monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2008-0057, quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

b. Order R5-2008-0057 required receiving water monitoring at four monitoring locations: Monitoring Location RSW-001 located approximately 7 miles upstream; Monitoring Location RSW-002 located 500 feet upstream; Monitoring Location RSW-003 located 500 feet downstream; and Monitoring Location RSW-004 located approximately 3 miles downstream at the Antioch Bridge. The San Joaquin River at the point of discharge is 3,300 feet wide, whereas the outfall extends approximately 550 feet into the San Joaquin River with the last 150 feet including the diffuser ports. Due to the large size of the San Joaquin River at the point of discharge, the significant dilution available, the high level of treatment, and the effluent limitations for pH, temperature, and oxygen demanding substances, (i.e., BOD_5, TSS, and ammonia), this Order discontinues effluent monitoring requirements at Monitoring Locations RSW-002, RSW-003, and RSW-004, as they are not necessary to evaluate compliance with the receiving water limits and are most likely not effective at doing so.

c. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. This Order requires monitoring for priority pollutants and other pollutants of concern quarterly during the third year of the permit term, performed concurrently with effluent monitoring, at Monitoring Location RSW-001 in order to collect data to conduct an RPA for the next permit renewal. See Attachment H for more detailed requirements related to performing priority pollutant monitoring.

d. This Order includes an effluent limitation for temperature which requires that the effluent temperature not exceed the natural receiving water temperature by more than 20°F. In order to characterize the natural receiving water temperature, this Order establishes a new monitoring location, defined as Monitoring Location RSW-002, located in the San Joaquin River at Jersey Point, approximately 1 mile upstream of Discharge Point 001. The Discharger may report results obtained from the San Joaquin River at Jersey Point at U.S. Bureau of Reclamation Station JER to satisfy this monitoring requirement.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater. Consistent with Order R5-2008-0057, this Order requires annual monitoring for electrical conductivity, total dissolved solids, and standard minerals.

2. UV Disinfection System Monitoring

UV system monitoring and reporting are required to ensure that the UV system is operated to adequately inactivate pathogens in the wastewater. UV Disinfection system

monitoring is imposed to achieve equivalency to requirements established by the California Department of Public Health (DPH), and the National Water Research Institute (NWRI), and American Water Works Association Research Foundation NWRI/AWWARF's "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse."

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the following <**Describe Notification Process (e.g., newspaper name and date)**>

The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:
http://www.waterboards.ca.gov/centralvalley/

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by **5:00 p.m. on 29 October 2013**.

C. Public Hearing

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	5/6 December 2013
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

D. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

State Water Resources Control Board
Office of Chief Counsel

P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instructions on how to file a petition for review, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Kathleen Harder at (916) 464-4778.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	18[1]	291[1]	200	750[2]	--	--	--	--	200	No
Ammonia Nitrogen, Total (as N)	mg/L	0.66	0.2	1.25	2.14[2]	1.25[3]	--	--	--	--	Yes
Chloride	mg/L	640	180	155[4]	860	230	--	--	155[4]	250	No
Chlorpyrifos	µg/L	<0.005	<0.005	0.015	--	--	--	--	0.015	--	No[5]
Copper, Total Recoverable	µg/L	2.5	2.9	10.4[6]/4.6[7]	21[6]/6.5[7]	13[6]/4.6[7]	1,300	--	10.4	1,000	No
Diazinon	µg/L	<0.007	<0.007	0.10	--	--	--	--	0.10	--	No[5]
Electrical Conductivity @ 25°C	µmhos/cm	1,216	1,100	440[7]	--	--	--	--	440[8]	900	No
Fluoride	mg/L	0.65	0.064	1[9]	--	--	--	--	--	2	No
Iron, Total Recoverable	µg/L	31[1]	486[1]	300	--	--	--	--	300	300	No
Lead, Total Recoverable	µg/L	0.07	0.34	4.5[5]/1.1[6]	117[5]/29[6]	4.5[5]/1.1[6]	--	--	--	15	No
Manganese, Total Recoverable	µg/L	11[1]	17[1]	50	--	--	--	--	50	50	No
Mercury, Total Recoverable	µg/L	0.0009	0.0045	0.050	--	--	0.050	0.051	--	2	No
Methylene Blue Active Substances	mg/L	0.059[1]	0.021[1]	0.50	--	--	--	--	--	0.50	No
Nitrate Nitrogen, Total (as N)	mg/L	10	0.47	10	--	--	10	--	--	10	Yes
Nitrite Nitrogen, Total (as N)	mg/L	0.011	0.04	1	--	--	--	--	--	1	No
Sulfate	mg/L	92[1]	21[1]	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	630[1]	342[1]	500	--	--	--	--	--	500	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) Represents the maximum observed annual average concentration for comparison with the Secondary MCL.
(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
(3) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.
(4) The Basin Plan contains site-specific water quality objectives for chloride at the Antioch Water Works Intake based on the 2006 Bay-Delta Plan based on water year type. See Section IV.C.3.c of the Fact Sheet (Attachment F).
(5) As discussed further in Section IV.C.3.c of the Fact Sheet (Attachment F), an effluent limitation for diazinon and chlorpyrifos is established in accordance with the Total Maximum Daily Load for the Sacramento-San Joaquin Delta.
(6) Criteria to be compared to the maximum effluent concentration.
(7) Criteria to be compared to the maximum upstream receiving water concentration.
(8) The Basin Plan contains site-specific water quality objectives for electrical conductivity at the Jersey Point based on the 2006 Bay-Delta Plan based on water year type. See Section IV.C.3.c of the Fact Sheet (Attachment F).
(9) Agricultural water goal.

ATTACHMENT H – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

I. Background. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:

A. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

B. Effluent and receiving water temperature. This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

C. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness and pH dependent.

II. Monitoring Requirements.

A. Quarterly Monitoring. For one year during the third or fourth year of the permit term, quarterly priority pollutant samples shall be collected from the effluent and upstream receiving water at Monitoring Locations EFF-001 and RSW-001 and analyzed for the constituents listed in Table H-1. . Results of the quarterly monitoring shall be submitted with the electronic self-monitoring reports that are submitted to the State Water Board's CIWQS Program website in accordance with Attachment E, Section X.B.1. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

B. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

C. Sample type. All effluent samples shall be taken as 24-hour composite samples, unless not appropriate to meet analytical holding time requirements per 40 CFR Part 136. All receiving water samples shall be taken as grab samples.

D. Additional Monitoring/Reporting Requirements. The Discharger shall conduct the monitoring and reporting in accordance with the General Monitoring Provisions and Reporting Requirements in Attachment E.

E. Duplicate Monitoring. If routine monitoring completed in accordance with Attachment E, Table E-3 includes a constituent listed in Table H-1, duplicate monitoring is not required.

Table H-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethene	156592	
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono chlorobenzene)	108907	2
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1
94	Naphthalene	91203	10
38	Tetrachloroethene	127184	0.5
39	Toluene	108883	2
40	trans-1,2-Dichloroethylene	156605	1

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
43	Trichloroethene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	
	Trichlorofluoromethane	75694	
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	
	Styrene	100425	
	Xylenes	1330207	
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	Bis(2-ethylhexyl) phthalate[1]	117817	5

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	1
100	Pyrene	129000	10
	Aluminum	7429905	
1	Antimony	7440360	5
2	Arsenic	7440382	10
15	Asbestos	1332214	
	Barium	7440393	
3	Beryllium	7440417	2
4	Cadmium	7440439	0.25
5a	Chromium (III)	7440473	2
5b	Chromium (VI)	18540299	10
6	Copper	7440508	0.5
14	Cyanide	57125	5
	Fluoride	7782414	
	Iron	7439896	
7	Lead	7439921	0.5
8	Mercury	7439976	0.5
	Manganese	7439965	

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Molybdenum	7439987	
9	Nickel	7440020	5
10	Selenium	7782492	5
11	Silver	7440224	1
12	Thallium	7440280	1
	Tributyltin	688733	
13	Zinc	7440666	10
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5
126	Toxaphene	8001352	0.5
	Atrazine	1912249	
	Bentazon	25057890	
	Carbofuran	1563662	

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	2,4-D	94757	
	Dalapon	75990	
	1,2-Dibromo-3-chloropropane (DBCP)	96128	
	Di(2-ethylhexyl)adipate	103231	
	Dinoseb	88857	
	Diquat	85007	
	Diuron		0.05
	Endothal	145733	
	Ethylene Dibromide	106934	
	Glyphosate	1071836	
	Methoxychlor	72435	
	Molinate (Ordram)	2212671	
	Oxamyl	23135220	
	Picloram	1918021	
	Simazine (Princep)	122349	
	Thiobencarb	28249776	
16	2,3,7,8-TCDD (Dioxin)	1746016	
	2,4,5-TP (Silvex)	93765	
	Diuron		0.05
	Diazinon	333415	0.015 µg/L[2]
	Chlorpyrifos	2921882	0.014 µg/L[2]
	Ammonia (as N)	7664417	
	Boron	7440428	
	Chloride	16887006	
	Dissolved Organic Carbon		
	Total Organic Carbon		
	Total Kjeldahl Nitrogen		
	Flow		
	Hardness (as $CaCO_3$)		
	Foaming Agents (MBAS)		
	Mercury, Methyl	22967926	0.06 ng/L*
	Nitrate (as N)	14797558	2,000
	Nitrite (as N)	14797650	400
	pH		0.1
	Phosphorus, Total (as P)	7723140	
	Specific conductance (EC)		

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Sulfate		500
	Sulfide (as S)		
	Sulfite (as SO_3)		
	Temperature		
	Total Dissolved Solids (TDS)		

[1] Monitoring shall be conducted using clean techniques.

[1] The reporting levels required in Table I-1 for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

[2] Total Maximum Daily Load (TMDL) for this constituent, which requires a maximum RL to determine reasonable potential and determine compliance with the TMDL.