

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2019-0068
NPDES NUMBER. CA0077704

WASTE DISCHARGE REQUIREMENTS
FOR THE CITY OF ANDERSON WATER POLLUTION CONTROL PLANT, SHASTA COUNTY

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

Table 1. Discharger Information

Discharger:	City of Anderson
Name of Facility:	Water Pollution Control Plant
Facility Street Address:	3701 Rupert Road
Facility City, State, Zip:	Anderson, CA 96007
Facility County:	Shasta County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Advanced Secondary Treated Wastewater	40° 28' 8"	122° 16' 45"	Sacramento River

Table 3. Administrative Information

This Order was Adopted on:	11 October 2019
This Order shall become effective on:	1 December 2019
This Order shall expire on:	30 November 2024
The Discharger shall file a Report of Waste Discharge (ROWD) as an application for reissuance of WDRs in accordance with title 23, California Code of Regulations, and an application for reissuance of a NPDES permit no later than:	30 November 2023
The United States 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, Patrick Pulupa, 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 **11 October 2019**.



PATRICK PULUPA, Executive Officer

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I. FACILITY INFORMATION

Information describing the City of Anderson Water Pollution Control Plant (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 waste discharge requirements (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 a National Pollutant Discharge Elimination System (NPDES) permit authorizing the Discharger to discharge into waters of the United States at the discharge location described in Table 2 subject to the WDR's in this Order.
- 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 C.F.R. section 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 domiciliary, 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 report 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 Persons.** 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 R5-2014-0100 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 violations of the previous Order.

III. DISCHARGE PROHIBITIONS

- A.** Discharge of wastewater from the Facility, as the Facility is specifically described in the Fact Sheet in section II.B, in a manner different from that described in this Order 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.** Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.
- E. Average Dry Weather Flow.** Discharges exceeding an average dry weather flow of 2.0 million gallons per day (MGD) are prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point D-001

1. Final Effluent Limitations – Discharge Point D-001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001. Unless otherwise specified compliance shall be measured at Monitoring Location 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	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-day @ 20°C)	Milligrams per liter (mg/L)	10	15	--
Total Suspended Solids	mg/L	10	15	--
Chlorodibromomethane	Micrograms per liter (µg/L)	14	--	36
Copper, Total Recoverable	µg/L	22	--	32
Cyanide	µg/L	70	--	140
Dichlorobromomethane	µg/L	31	--	59
Zinc, Total Recoverable	µg/L	85	--	130
Ammonia Nitrogen, Total (as N)	mg/L	5.4	11	--
Ammonia Nitrogen, Total (as N)	Pounds per day (lbs/day) ¹	90	180	--
Nitrate Plus Nitrite	mg/L	40	64	--

¹ Based on an average dry weather flow of 2.0 million gallons per day (MGD).

² Expressed as an annual average.

- b. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD₅) 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:
- 70%, minimum for any one bioassay; and
 - 90%, median for any three consecutive bioassays.
- d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:
- 0.011 mg/L, as a 4-day average; and
 - 0.019 mg/L, as a 1-hour average.
- e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed the following with compliance measured at Monitoring Location EFF-001 as described in the MRP, Attachment E:
- 23 most probable number (MPN) per 100 mL, as a 7-day median; and
 - 240 MPN/100 mL, more than once in any 30-day period.
- f. **Electrical Conductivity @ 25°C.** The effluent calendar year annual average electrical conductivity shall not exceed 430 µmhos/cm.

g. **Diazinon and Chlorpyrifos.**

i. **Average Monthly Effluent Limitation (AMEL)**

$$S_{AMEL} = \frac{C_{DM-AVG}}{0.079} + \frac{C_{CM-AVG}}{0.012} \leq 1.0$$

C_{DM-AVG} = average monthly diazinon effluent concentration in µg/L.

C_{CM-AVG} = average monthly chlorpyrifos effluent concentration in µg/L.

ii. **Average Weekly Effluent Limitation (AWEL)**

$$S_{AWEL} = \frac{C_{DW-AVG}}{0.14} + \frac{C_{CW-AVG}}{0.021} \leq 1.0$$

C_{DW-AVG} = average weekly diazinon effluent concentration in µg/L.

C_{CW-AVG} = average weekly chlorpyrifos effluent concentration in µg/L.

h. **pH.**

i. 6.0 Standard Units (SU) as an instantaneous minimum.

ii. 8.5 SU as an instantaneous maximum.

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in the Sacramento 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 monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
 - b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
 - c. The dissolved oxygen concentration to be reduced below 7.0 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 (MCL's) set forth in CCR, Title 22, division 4, chapter; nor
 - g. Thiobencarb to be present in excess of 1.0 µg/L.
 - h. Dalapon and Diquat shall have results of non-detect in the receiving water.
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 MCL's specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.
11. **Salinity.** Electrical conductivity shall not exceed 230 µmhos/cm (50 percentile) or 235 µmhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain, based upon previous 10 years of record.
12. **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.

13. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
14. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
15. **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.
16. **Temperature.** The natural temperature to be increased by more than 5°F nor shall the temperature be elevated above 56°F during periods when temperature increases will be detrimental to the fishery. Compliance to be determined based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.
17. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
18. **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

Release of waste constituents from any portion of the Facility shall not cause groundwater to:

1. Exceed a total coliform organism level of 2.2 MPN/100 mL over any seven-day period.
2. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.
3. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

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:

- i. 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.
- ii. 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.
- iii. Change in sludge use or disposal practice. Under 40 CFR section 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.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by U.S. EPA 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 U.S. EPA 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. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

- 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.
- 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 section 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.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.
- d. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE) or Toxicity Evaluation Study (TES), this Order may be reopened to include a revised chronic toxicity effluent limitation, a revised acute toxicity effluent limitation, and/or an effluent limitation for a specific toxicant identified in a TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions, this Order may be reopened to implement the new provisions.

- e. **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 when developing effluent limitations except for copper and zinc. 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.
 - f. **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 approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.
 - g. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 31 May 2018, as part of the CV-SALTS initiative, the Central Valley Water Board approved Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley. If approved by the State Water Board, the Office of Administrative Law, and U.S. EPA, the Amendments would impose certain new requirements on salt and nitrate discharges. More information regarding these [Basin Plan Amendments](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/) can be found at the following link: (https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/)

If the Amendments ultimately go into effect, this Order may be amended or modified to incorporate any newly-applicable requirements.
2. **Special Studies, Technical Reports and Additional Monitoring Requirements**
- a. **Toxicity Reduction Evaluation Requirements.** 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 chronic toxicity thresholds defined in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (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. Alternatively, under certain conditions as described in this provision below, the Discharger may participate in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE.

TRE Work Plan. The Discharger shall submit to the Central Valley Water Board a TRE Work Plan for approval by the Executive Officer by the due date in the Technical Reports Table. The TRE Work Plan shall outline the

procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with U.S. EPA guidance as discussed in the Fact Sheet (Attachment F, Section VI.B.2.a) and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

- i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger is 9 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold above which the Discharger is required to initiate additional actions to evaluate effluent toxicity as specified in subsection iii, below.
- ii. **Chronic Toxicity Monitoring Trigger Exceeded.** When a chronic whole effluent toxicity result during routine monitoring exceeds the chronic toxicity monitoring trigger, the Discharger shall proceed as follows:
 - (a) **Initial Toxicity Check.** If the percent effect is less than 25 percent at 11.1 percent effluent, check for any operation or sample collection issues and return to routine chronic toxicity monitoring. Otherwise, proceed to step (b).
 - (b) **Evaluate 6-week Median.** The Discharger may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity monitoring trigger to evaluate compliance using a 6-week median. If the 6-week median is greater than 9 TUc (as 100/EC₂₅) and the percent effect is greater than 25 percent at 11.1 percent effluent, proceed with subsection (c). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring.
 - (c) **Toxicity Source Easily Identified.** 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 resume routine chronic toxicity monitoring; If the source of toxicity is not easily identified the Discharger shall conduct a site-specific TRE or participate in an approved TES as described in the following subsections.
 - (d) **Toxicity Evaluation Study.** If the percent effect is ≤ 50 percent at 11.1 percent effluent, as the median of up to three consecutive chronic toxicity tests within a 6-week period, the Discharger may participate in an approved TES in lieu of a site-specific TRE. The TES may be conducted individually or as part of a coordinated group effort with other similar dischargers. If the Discharger chooses not to participate in an approved TES, a site-specific TRE shall be initiated in accordance with subsection (e)(1), below. Nevertheless, the Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a site-specific TRE within the past 12 months and has been unsuccessful in identifying the toxicant.

(e) **Toxicity Reduction Evaluation.** If the percent effect is > 50 percent at 11.1 percent effluent, as the median of three consecutive chronic toxicity tests within a 6-week period, the Discharger shall initiate a site-specific TRE as follows:

- (1) **Within thirty (30) days** of exceeding the chronic toxicity monitoring trigger, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:
 - Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;
 - Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - A schedule for these actions.

3. **Best Management Practices and Pollution Prevention**

a. **Pollutant Minimization Program**

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

- i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or
- ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Central Valley Water Board:

- i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;
- ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;
- iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;
- iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

- v. An annual status report that shall be sent to the Central Valley Water Board including:
 - (a) All PMP monitoring results for the previous year;
 - (b) A list of potential sources of the reportable priority pollutant(s);
 - (c) A summary of all actions undertaken pursuant to the control strategy; and
 - (d) A description of actions to be taken in the following year.
- b. **Salinity Evaluation and Minimization Plan.** The Discharger shall continue to implement a salinity evaluation and minimization plan to identify and address sources of salinity discharged from the Facility.

The Discharger shall evaluate the effectiveness of the salinity evaluation and minimization plan and provide a summary with the Report of Waste Discharge. Furthermore, if the effluent annual average calendar year electrical conductivity concentration exceeded 430 $\mu\text{mhos/cm}$ during the term of this Order, the salinity evaluation and minimization plan shall be reviewed and updated. The updated salinity evaluation and minimization plan shall be submitted by 1 April following the calendar year in which the electrical conductivity concentration exceeded 430 $\mu\text{mhos/cm}$.

4. **Construction, Operation and Maintenance Specifications**

- a. **Emergency Storage, Sludge Stabilization, and Drying Ponds Operating Requirements**
 - i. The treatment facilities and emergency storage ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
 - ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
 - iii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - (a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
 - (b) Weeds shall be minimized.
 - (c) Dead algae, vegetation, and debris shall not accumulate on the water surface.
 - iv. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).
 - v. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return

period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).

- vi. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the specification at subsection v., above.
- vii. The discharger of waste classified as “hazardous” as defined in section 2521(a) of Title 23, California Code of Regulations (CCR), or “designated”, as defined in section 13173 of the Water Code, to the emergency storage pond or treatment ponds is prohibited.
- viii. Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property by the Discharger).
- ix. As means of discerning compliance with item viii. above, the dissolved oxygen content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L.
- x. The emergency storage pond shall not have a pH less than 6.5 or greater than 8.5 for periods of greater than 72 hours.

5. Special Provisions for Publicly-Owned Treatment Works (POTWs)

a. Pretreatment Requirements

- i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 C.F.R. part 403, including any subsequent regulatory revisions to 40 C.F.R. part 403. Where 40 C.F.R. part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within 6 months from the issuance date of this permit or the effective date of the 40 CFR Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by U.S. EPA or other appropriate parties, as provided in the CWA. U.S. EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the CWA.
- ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate and effective enforcement actions. The Discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.
- iii. The Discharger shall perform the pretreatment functions as required in 40 C.F.R. part 403 including, but not limited to:

- (a) Implement the necessary legal authorities as provided in 40 CFR section 403.8(f)(1);
 - (b) Enforce the pretreatment requirements under 40 C.F.R. section 403.5 and 403.6;
 - (c) Implement the programmatic functions as provided in 40 C.F.R. section 403.8(f)(2); and
 - (d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 C.F.R. section 403.8(f)(3).
- iv. **Pretreatment Reporting Requirements.** Pretreatment reporting requirements are included in the Monitoring and Reporting Program, section X.D.5 of Attachment E.
- b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 C.F.R. part 503.
 - i. Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, division 2, subdivision 1, section 20005, et seq. Removal for further treatment, storage, disposal, or reuse at sites (e.g., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy these specifications.

Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant performance.

The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations in section V.B. of this Order. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations included in section V.B. of this Order.

- ii. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 C.F.R. part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 C.F.R. part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 C.F.R. part 503 whether or not they have been incorporated into this Order.
 - iii. The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.
 - iv. The onsite sludge/biosolids treatment, processing, and storage for the Facility is described in the Fact Sheet (Attachment F, Section II.A). Any proposed change in the onsite treatment, processing, or storage of sludge/biosolids shall be reported to the Executive Officer at least 90 days in advance of the change, and shall not be implemented until written approval by the Executive Officer.
- c. **Resource Recovery from Anaerobically Digestible Material.** If the Discharger will receive hauled-in anaerobically digestible material for injection into an anaerobic digester, the Discharger shall notify the Central Valley Water Board and develop and implement Standard Operating Procedures for this activity. The Standard Operating Procedures shall be developed prior to receiving hauled-in anaerobically digestible material. The Standard Operating Procedures shall address material handling, including unloading, screening, or other processing prior to anaerobic digestion; transportation; spill prevention; and spill response. In addition, the Standard Operating Procedures shall address avoidance of the introduction of materials that could cause interference, pass-through, or upset of the treatment processes; avoidance of prohibited material; vector control; odor control; operation and maintenance; and the disposition of any solid waste segregated from introduction to the digester. The Discharger shall train its staff on the Standard Operating Procedures and shall maintain records for a minimum of five years for each load received, describing the hauler, waste type, and quantity received. In addition, the Discharger shall maintain records for a minimum of five years for the disposition, location, and quantity of cumulative pre-digestion-segregated solid waste hauled off-site.

6. **Other Special Provisions**

- a. All storm water shall be directed to the 3 million-gallon emergency storage pond, where it may be routed to the headworks, or left to percolate or evaporate. Any change in storm water discharge location is subject to the requirements of the State Water Board General Industrial Storm Water Permit.

7. **Compliance Schedules – Not Applicable**

VII. COMPLIANCE DETERMINATION

- A. BOD₅ and TSS Effluent Limitations (Section IV.A.1.a and IV.A.1.b).** Compliance with the final effluent limitations for BOD₅ and TSS required in Waste Discharge Requirements section IV.A.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Waste Discharge Requirements section IV.A.1.b for percent removal shall be calculated using the arithmetic mean of BOD₅ 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. Average Dry Weather Flow Effluent Limitations (Section III.F).** The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow discharge prohibition will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).
- C. Total Coliform Organisms Effluent Limitations (Section IV.A.1.f).** 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 23 per 100 milliliters, the Discharger will be considered out of compliance.
- D. Total Residual Chlorine Effluent Limitations (Section IV.A.1.d).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.
- Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).
- 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.

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.

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.

Effect Concentration (EC)

A point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC₂₅ is a point estimate of the toxicant concentration that would cause an observable adverse effect in 25 percent of the test organisms.

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.

Endpoint

An effect that is measured in a toxicity study. Endpoints in toxicity tests may include, but are not limited to survival, reproduction, and growth.

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.

Inhibition Concentration

Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth), calculated from a continuous model (i.e., Interpolation Method). IC25 is a point estimate of the toxic concentration that would cause a 25-percent reduction in a non-lethal biological measurement.

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 measured concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in 40 C.F.R. part 136, Attachment B.

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.

No-Observed-Effect-Concentration (NOEC)

The highest concentration of toxicant to which organisms are exposed in a full life-cycle or partial life-cycle (short-term) test, that causes no observable adverse effects on the test organisms (i.e., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls).

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.

Percent Effect

The percent effect at the instream waste concentration (IWC) shall be calculated using untransformed data and the following equation:

$$\text{Percent Effect of the Sample} = \frac{\text{Mean Control Response} - \text{Mean Sample Response}}{\text{Mean Control Response}} \cdot 100$$

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:

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

where:

x is the observed value;

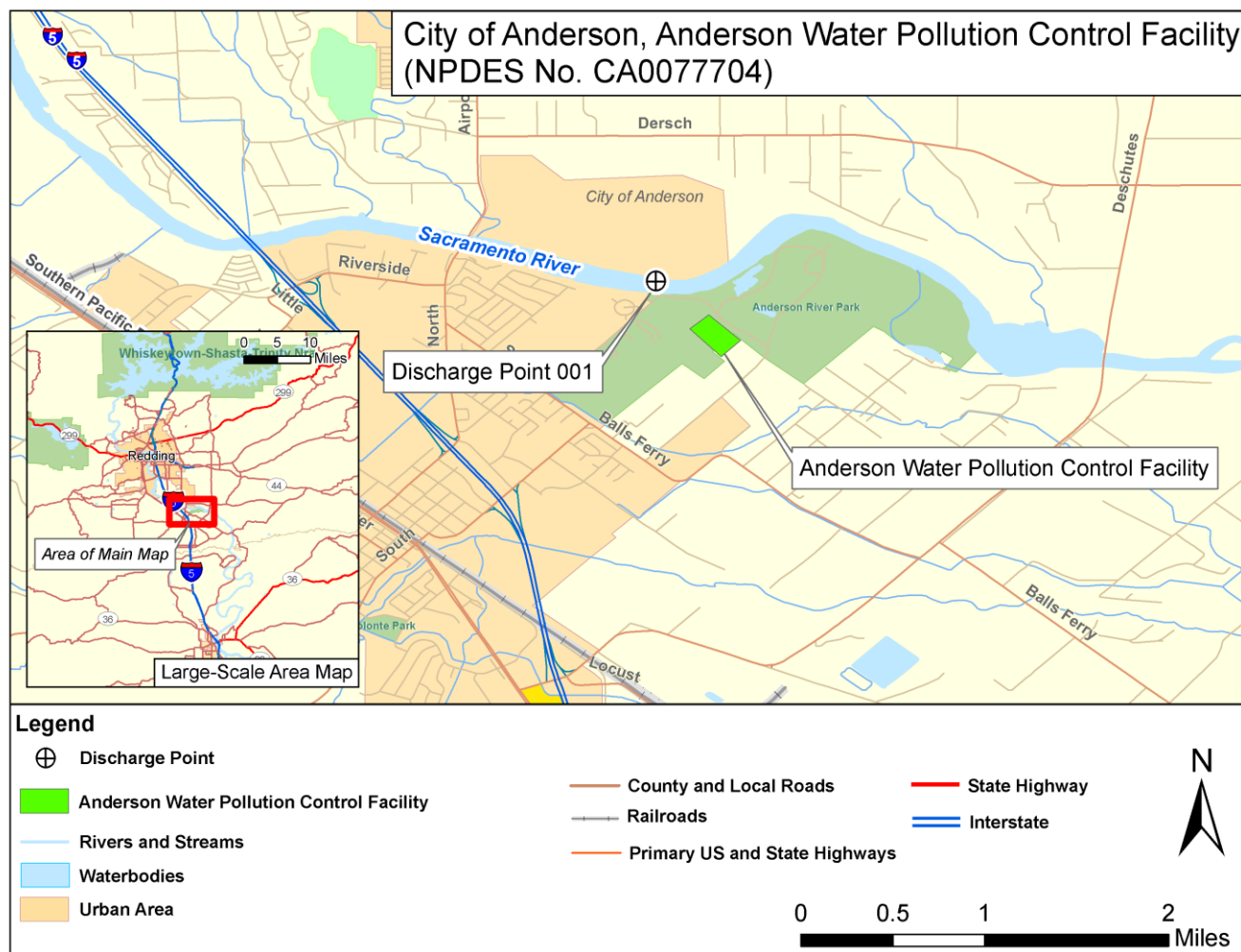
μ is the arithmetic mean of the observed values; and

n is the number of samples.

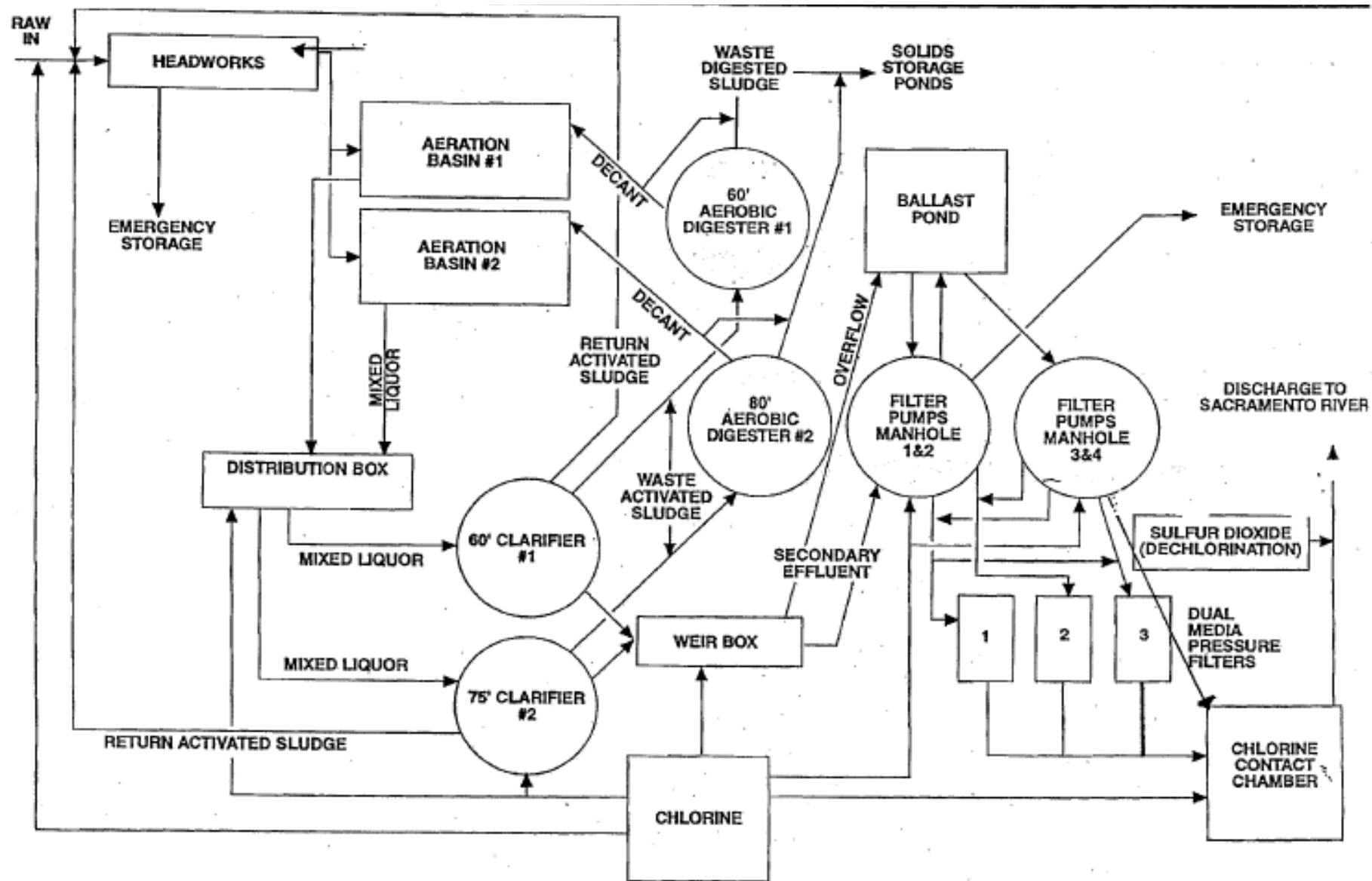
Toxicity Reduction Evaluation (TRE)

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



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the terms, requirements, and 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; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants 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 C.F.R. § 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 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 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 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 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 C.F.R. § 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 (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, § 13267, 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 (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, § 13267, 13383); 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. (33 U.S.C § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

G Bypass

1. Definitions
 - a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 prior notice, if possible at least 10 days before the date of the bypass. The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i).)
 - b. Unanticipated bypass. The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(n)(3)):

- a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 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 C.F.R. § 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(j)(1).)
- B. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. subchapters N or O. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or as required under 40 C.F.R. chapter 1,

subchapter N or O. For the purposes of this paragraph, a method is sufficiently sensitive when the method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N or O for the measured pollutant or pollutant parameter, or when:

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and:
 - a. The method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter, or;
 - b. The method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge;

In the case of pollutants or pollutant parameters for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. chapter 1, subchapters N or O, monitoring must be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters.
(40 C.F.R. § 122.21(e)(3), 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 C.F.R. 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 C.F.R. § 122.41(j)(2).)
- B. **Records of monitoring information shall include:**
 1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 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 C.F.R. § 122.41(h); Wat. Code, §§ 13267, 13383.)

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, V.B.5, and V.B.6 below. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.22(d).)
6. Any person providing the electronic signature for such documents described in Standard Provision – V.B.1, V.B.2, or V.B.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting V.B, and shall ensure that all of the relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R § 122.22(e).)

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 C.F.R. § 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 the results of monitoring, sludge use, or disposal practices. As of 21 December 2016 all reports and forms must be submitted electronically to the initial recipient, defined in Standard Provisions – Reporting V.J, and comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. Part 127. (40 C.F.R. § 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 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance which 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 report shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The report 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.

For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather.

As of 21 December 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted electronically to the initial recipient (State Water Board) defined in Standard Provisions – Reporting V.J. The reports shall comply with 40 C.F.R. part 3. They may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.
(40 C.F.R. § 122.41(l)(6)(i).)

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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(l)(1)(ii).)

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 C.F.R. § 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 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. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting V.E and the applicable required data in appendix A to 40 C.F.R. part 127. The Central Valley Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 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 C.F.R. § 122.41(l)(8).)

J. Initial Recipient for Electronic Reporting Data

The owner, operator, or the duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the appropriate initial recipient, as determined by U.S. EPA, and as defined in 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. section 127.2(c)]. U.S. EPA will update and maintain this listing. (40 C.F.R. § 122.41(l)(9).)

VI. STANDARD PROVISIONS – ENFORCEMENT

- A. 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 POTW's shall provide adequate notice to the Central Valley Water Board of the following (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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.** Final 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 accredited for such analyses by the State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW; formerly the Department of Public Health). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event an accredited laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen (DO), turbidity, temperature, and residual chlorine, such analyses performed by a non-accredited 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 U.S. EPA 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 accredited by DDW, 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 ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Resources Control Board at the following address:

State Water Resources Control Board
Quality Assurance Program Officer
Office of Information Management and Analysis
1001 I Street, Sacramento, CA 95814
- 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. Latitude: 40° 27' 55" N, Longitude: 122° 16' 30" W
--	SEC-001	Located at the weir box downstream of the secondary clarifiers and prior to the ballast pond and Filter Pumps Manhole 1 and 2.
001	EFF-001	Downstream from last connection through which wastes can be admitted into the outfall. Latitude: 40° 27' 53" N, Longitude: 122° 16' 27" W
--	RSW-001	In the Sacramento River, 100 feet upstream of Discharge Point 001. Latitude: 40° 28' 4.6" N, Longitude: 122° 16' 43" W
--	RSW-002	In the Sacramento River, 1/4 mile downstream of Discharge Point 001. Latitude: 40° 28' 9", Longitude: 122° 16' 24"

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	BIO-001	A location where a representative sample of biosolids can be obtained.
--	SPL-001	A location where a representative sample of the municipal water supply can be obtained.

The North latitude and West longitude information in Table E-1 above 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 in accordance with Table E-2 and the testing requirements described in section III.A.2 below.

Table E-2. Influent Monitoring – Monitoring Location INF-001

Conventional Pollutant Parameters	Units	Sample Type	Minimum Sampling Frequency
pH	standard units	Grab	2/Week
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite	2/Month
Total Suspended Solids	mg/L	24-hr Composite	2/ Month

2. **Table E-2 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-2:
 - a. **Applicable to all parameters.** 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. All **grab samples** shall not be collected at the same time each day to get a complete representation of variations in the influent.
 - c. All **composite samples** shall be collected from a 24-hour flow proportional composite.
 - d. **Biochemical Oxygen Demand and Total Suspended Solids.** A minimum of 7 days required between each sampling event.

B. Monitoring Location SEC-001

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

Table E-3. Influent Monitoring – Monitoring Location SEC-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor treated effluent at Monitoring Location EFF-001 in accordance with Table E-4 and the testing requirements described in section IV.A.2 below. 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-4. Effluent Monitoring – Monitoring Location EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
Conventional Pollutants			
Biochemical Oxygen Demand (BOD) 5-day @ 20° C	mg/L	24-hr Composite	1/Week
BOD	% removal	Calculate	2/Month
Total Suspended Solids (TSS)	mg/L	24-hr Composite	1/Week
TSS	% removal	Calculate	2/Month
pH	standard units	Grab	1/Day
Priority Pollutants			
Chlorodibromomethane	µg/L	Grab	1/Month
Copper, Total Recoverable	µg/L	24-hr Composite	1/Month
Dichlorobromomethane	µg/L	Grab	1/Month
gamma-BHC	µg/L	Grab	1/Quarter
Zinc, Total Recoverable	µg/L	24-hr Composite	1/Month
Priority Pollutants and Other Constituents of Concern	See Section IX.B	See Section IX.B	See Section IX.B

Parameter	Units	Sample Type	Minimum Sampling Frequency
Non-Conventional Pollutants			
Ammonia Nitrogen, Total (as N)	mg/L	Grab	2/Month
Chlorine, Total Residual	mg/L	Meter	Continuous
Chlorpyrifos	µg/L	Grab	1/Year
Cyanide	µg/L	Grab	1/Month
Dalapon	µg/L	Grab	1/Quarter
Diazinon	µg/L	Grab	1/Year
Dissolved Organic Carbon	mg/L	Grab	1/Month
Dissolved Oxygen	mg/L	Grab	1/Week
Diquat	µg/L	Grab	1/Quarter
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Month
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month
Nitrate plus Nitrite (as N)	mg/L	Calculate	1/Month
Temperature	°F(°C)	Grab	1/Week
Total Coliform Organisms	MPN/100 mL	Grab	2/Week
Total Dissolved Solids	mg/L	Grab	1/Quarter

2. **Table E-4 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-4:
- Applicable to all parameters.** 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.
 - 24-hour composite samples** shall be collected from a 24-hour flow proportional composite.
 - A hand-held field meter may be used for **temperature** provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration

and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

- d. **Temperature** and **pH** shall be recorded at the time of **ammonia** sample collection.
- e. Whole Effluent Toxicity. **Ammonia** samples shall be collected concurrently with whole effluent toxicity monitoring.
- f. **Ammonia sampling**. A minimum of 7 days required between each sampling event.
- g. 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 E, Table E-9).
- h. **Total Residual Chlorine** must be monitored using an analytical method that is sufficiently sensitive to measure at the permitted level of 0.01 mg/L.
- i. **Nitrate and Nitrite** monitoring shall be conducted concurrently.
- j. **Hardness** samples shall be collected concurrently with metals samples.
- k. **Total Coliform Organisms**. Samples for total coliform organisms may be collected at any point following disinfection.
- l. **Chlorpyrifos** and **Diazinon** shall be sampled using U.S. EPA Method 625M, Method 8141, or equivalent GC/MS method with a lower Reporting Limit than the Basin Plan Water Quality Objectives of 0.015 µg/L and 0.1 µg/L for chlorpyrifos and diazinon, respectively.
- m. **Total Dissolved Solids**. Collection shall be concurrent with Electrical Conductivity monitoring.

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**. – The Discharger shall perform quarterly 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 grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at 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 meet the following chronic toxicity testing requirements:

1. **Monitoring Frequency** – The Discharger shall perform routine annual three species chronic toxicity testing. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 9 TUc (as 100/NOEC) **AND** a percent effect greater than 25 percent at 11.1 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and perform chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least one week apart, and the final monitoring event shall be initiated no later than 6 weeks from the routine monitoring event that exhibited toxicity.
2. **Sample Types** – Effluent samples shall be flow proportional or time-weighted 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. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.
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 following unless otherwise specified in writing by the Executive Officer:
 - a. The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
 - b. The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
 - c. 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** – For routine and compliance chronic toxicity monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below, unless an alternative dilution

series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-5. Chronic Toxicity Testing Dilution Series

Samples	Dilution ^a %	Dilution ^a %	Dilution ^a %	Dilution ^a %	Dilution ^a %	Controls
% Effluent	100	50	25	11.1	5	0
% Control Water	0	50	75	88.9	95	100

a Receiving water control or laboratory water control may be used as the diluent.

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 the Method Manual.

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.** Routing and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following the 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 type, i.e., routine, compliance, TES, or TRE monitoring.

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 Sacramento River at Monitoring Location RSW-001 in accordance with Table E-6 and the testing requirements described in section VIII.A.2. and 3. Below.

Table E-6. Receiving Water Monitoring Requirements – Monitoring Location RSW-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Conventional Pollutants			
pH	Standard units	Grab	1/Week
Priority Pollutants			
Cooper, Total Recoverable	µg/L	Grab	1/Month
Copper, Dissolved	µg/L	Grab	1/Month
Zinc, Total Recoverable	µg/L	Grab	1/Month
Zinc, Dissolved	µg/L	Grab	1/Month
Priority Pollutants and Other Constituents of Concern	See Section IX.B	See Section IX.B	See Section IX.B

Parameter	Units	Sample Type	Minimum Sampling Frequency
Non-Conventional Pollutants			
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month
Dissolved Organic Carbon	mg/L	Grab	1/Month
Dissolved Oxygen	mg/L	Grab	1/Week
Electrical Conductivity	µmhos/cm	Grab	1/Month
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Month
Standard Minerals	mg/L	Grab	1/Year
Temperature	°F (°C)	Grab	1/Week
Total Dissolved Solids	mg/L	Grab	1/Quarter
Turbidity	NTU	Grab	1/Week

2. **Table E-6 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-6:

- a. **Applicable to all parameters.** 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. **Copper (total and dissolved) and zinc (total and dissolved).** Receiving water hardness and pH required at time of sampling.
- c. For all **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 E, section IX.C).
- d. **Standard minerals** shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
- e. A hand-held field meter may be used for **electrical conductivity** and **pH**, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
- f. **Total ammonia nitrogen** (TAN) is the sum of ammonium ion (NH₄⁺) and unionized ammonia (NH₃).

3. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by RSW-001 and RSW-002 when discharging to the Sacramento River. Attention shall be given to the presence of:
 - a. Floating or suspended matter;
 - b. Discoloration;
 - c. Bottom deposits;
 - d. Aquatic life;
 - e. Visible films, sheens, or coatings;
 - f. Fungi, slimes, or objectionable growths; and
 - g. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

B. Monitoring Location RSW-002

1. The Discharger shall monitor the Sacramento River at Monitoring Location RSW-002 in accordance with Table E-7 and the testing requirements described in section VIII.B.2. below.

Table E-7. Receiving Water Monitoring Requirements – Monitoring Location RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Conventional Pollutants				
pH	Standard units	Grab	1/Week	VIII.B.2.
Non-Conventional Pollutants				
Dalapon	µg/L	Grab	1/Quarter	VIII.B.2.
Dissolved Oxygen	mg/L	Grab	1/Week	VIII.B.2.
Diquat	µg/L	Grab	1/Quarter	VIII.B.2.
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	VIII.B.2.
Temperature	°F (°C)	Grab	1/Week	VIII.B.2.
Total Dissolved Solids	mg/L	Grab	1/Quarter	VIII.B.2.
Turbidity	NTU	Grab	1/Week	VIII.B.2.

2. **Table E-7 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-7:
 - a. **Applicable to all parameters.** 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. A hand-held field meter may be used for **temperature, pH, dissolved oxygen** and **electrical conductivity**, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

IX. OTHER MONITORING REQUIREMENTS

A. Municipal Water Supply

1. Monitoring Location SPL-001

- a. The Discharger shall monitor the municipal water supply at Monitoring Location SPL-001 in accordance with Table E-8 and the testing requirements described in section IX.A.2. below.

Table E-8. Municipal Water Supply Monitoring Requirements – Location SPL-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total Dissolved Solids	mg/L	Grab	1/Quarter
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Year
Standard Minerals	mg/L	Grab	1/Year
Copper, Total Recoverable	µg/L	Grab	1/Quarter
Zinc, Total Recoverable	µg/L	Grab	1/Quarter

2. **Table E-8 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-8:
- a. **Applicable to all parameters.** 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. 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.
- c. **Standard minerals** shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

B. Effluent and Receiving Water Characterization

1. **Quarterly Monitoring.** Quarterly samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-9, below. Quarterly monitoring shall be conducted for one year beginning with the fourth quarter of 2020 and the results of such monitoring be submitted to the Central Valley Water Board with the quarterly self-monitoring reports. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.
2. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
3. The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month, as required in Table E-4, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.
4. **Sample Types.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-9 below. 24-hour composite samples shall be collected from a 24-hour flow proportional composite.
5. **Maximum Reporting Level.** The reporting levels required in this table for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.
6. **Bis (2-ethylhexyl) phthalate.** In order to verify if bis (2-ethylhexyl) phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.
4. **Analytical Methods Report.** The Discharger shall submit a report electronically via CIWQS submittal outlining reporting levels (RL's), method detection limits (MDL's), and analytical methods for all constituents to be monitored in the influent, effluent, receiving water, and characterization monitoring by the due date shown in the Technical Reports Table. 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 (ML's) 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 RL's, 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 E-9 below provides required maximum reporting levels in accordance with the SIP. NL=Not Listed.

Table E-9. Effluent and Receiving Water Characterization Monitoring

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
2- Chloroethyl vinyl ether	µg/L	Grab	1
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	0.5
Carbon Tetrachloride	µg/L	Grab	0.5
Chlorobenzene	µg/L	Grab	0.5
Chloroethane	µg/L	Grab	0.5
Chloroform	µg/L	Grab	2
Chloromethane	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Methyl bromide (Bromomethane)	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
3-Methyl-4-Chlorophenol	µg/L	Grab	NL
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	NL
Trichlorofluoromethane	µg/L	Grab	NL
1,1,1-Trichloroethane	µg/L	Grab	0.5
1,1,2- Trichloroethane	µg/L	Grab	0.5
1,1-dichloroethane	µg/L	Grab	0.5
1,1-dichloroethylene	µg/L	Grab	0.5
1,2-dichloropropane	µg/L	Grab	0.5
1,3-dichloropropylene	µg/L	Grab	0.5
1,1,2,2-tetrachloroethane	µg/L	Grab	0.5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	0.5
1,2,4-trichlorobenzene	µg/L	Grab	1
1,2-dichloroethane	µg/L	Grab	0.5
1,2-dichlorobenzene	µg/L	Grab	0.5
1,3-dichlorobenzene	µg/L	Grab	0.5
1,4-dichlorobenzene	µg/L	Grab	0.5
Styrene	µg/L	Grab	NL
Xylenes	µg/L	Grab	NL
1,2-Benzanthracene	µg/L	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	24-hr Composite	NL
Antimony	µg/L	24-hr Composite	5
Arsenic	µg/L	24-hr Composite	10
Asbestos	MFL	24-hr Composite	NL
Barium	µg/L	24-hr Composite	NL
Beryllium	µg/L	24-hr Composite	2
Cadmium	µg/L	24-hr Composite	0.5
Chromium (Total)	µg/L	24-hr Composite	10
Chromium (VI)	µg/L	24-hr Composite	10
Copper	µg/L	24-hr Composite	0.5
Cyanide	µg/L	24-hr Composite	5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
Fluoride	µg/L	24-hr Composite	NL
Iron	µg/L	24-hr Composite	NL
Lead	µg/L	24-hr Composite	0.5
Mercury	µg/L	Grab	0.5
Manganese	µg/L	24-hr Composite	NL
Molybdenum	µg/L	24-hr Composite	NL
Nickel	µg/L	24-hr Composite	20
Selenium	µg/L	24-hr Composite	5
Silver	µg/L	24-hr Composite	0.25
Thallium	µg/L	24-hr Composite	1
Tributyltin	µg/L	24-hr Composite	NL
Zinc	µg/L	24-hr Composite	20
4,4'-DDD	µg/L	24-hr Composite	0.05
4,4'-DDE	µg/L	24-hr Composite	0.05
4,4'-DDT	µg/L	24-hr Composite	0.01
alpha-Endosulfan	µg/L	24-hr Composite	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite	0.01
Alachlor	µg/L	24-hr Composite	NL
Aldrin	µg/L	24-hr Composite	0.005
beta-Endosulfan	µg/L	24-hr Composite	0.01
beta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Chlordane	µg/L	24-hr Composite	0.1
delta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Dieldrin	µg/L	24-hr Composite	0.01
Endosulfan sulfate	µg/L	24-hr Composite	0.01
Endrin	µg/L	24-hr Composite	0.01
Endrin Aldehyde	µg/L	24-hr Composite	0.01
Heptachlor	µg/L	24-hr Composite	0.01
Heptachlor Epoxide	µg/L	24-hr Composite	0.02
Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite	0.5
PCB-1016	µg/L	24-hr Composite	0.5
PCB-1221	µg/L	24-hr Composite	0.5
PCB-1232	µg/L	24-hr Composite	0.5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
PCB-1242	µg/L	24-hr Composite	0.5
PCB-1248	µg/L	24-hr Composite	0.5
PCB-1254	µg/L	24-hr Composite	0.5
PCB-1260	µg/L	24-hr Composite	0.5
Toxaphene	µg/L	24-hr Composite	NL
Atrazine	µg/L	24-hr Composite	NL
Bentazon	µg/L	24-hr Composite	NL
Carbofuran	µg/L	24-hr Composite	NL
2,4-D	µg/L	24-hr Composite	NL
Dalapon	µg/L	24-hr Composite	NL
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	24-hr Composite	NL
Di(2-ethylhexyl)adipate	µg/L	24-hr Composite	NL
Dinoseb	µg/L	24-hr Composite	NL
Diquat	µg/L	24-hr Composite	NL
Endothal	µg/L	24-hr Composite	NL
Ethylene Dibromide	µg/L	24-hr Composite	NL
Methoxychlor	µg/L	24-hr Composite	NL
Molinate (Ordram)	µg/L	24-hr Composite	NL
Oxamyl	µg/L	24-hr Composite	NL
Picloram	µg/L	24-hr Composite	NL
Simazine (Princep)	µg/L	24-hr Composite	NL
Thiobencarb	µg/L	24-hr Composite	NL
2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite	NL
2,4,5-TP (Silvex)	µg/L	24-hr Composite	NL
Diazinon	µg/L	24-hr Composite	NL
Chlorpyrifos	µg/L	24-hr Composite	NL
Ammonia (as N)	mg/L	24-hr Composite	NL
Boron	µg/L	24-hr Composite	NL
Chloride	mg/L	24-hr Composite	NL
Flow	MGD	Meter	NL
Hardness (as CaCO ₃)	mg/L	Grab	NL
Foaming Agents (MBAS)	µg/L	24-hr Composite	NL
Mercury, Methyl	ng/L	Grab	NL
Nitrate (as N)	mg/L	24-hr Composite	NL

Parameter	Units	Effluent Sample Type	Maximum Reporting Level
Nitrite (as N)	mg/L	24-hr Composite	NL
pH	Std Units	Grab	NL
Phosphorus, Total (as P)	mg/L	24-hr Composite	NL
Specific conductance (EC)	µmhos/cm	24-hr Composite	NL
Sulfate	mg/L	24-hr Composite	NL
Sulfide (as S)	mg/L	24-hr Composite	NL
Sulfite (as SO ₃)	mg/L	24-hr Composite	NL
Temperature	°C	Grab	NL
Total Dissolved Solids (TDS)	mg/L	24-hr Composite	NL

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 (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's [California Integrated Water Quality System \(CIWQS\) Program website](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/) (http://www.waterboards.ca.gov/water_issues/programs/ciwqs/). The CIWQS website 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, SMRs including the results of all required monitoring using U.S. EPA-approved

test methods or other test methods specified in this Order. SMRs 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. Monthly SMRs are required even if there is no discharge. If no discharge occurs during the month, the monitoring report must be submitted stating that there has been no discharge.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. 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
1/Hour	Permit effective date	Hourly	Submit with monthly SMR
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	1 st 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 C.F.R. 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 ($\pm$ 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 SMRs 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 waste discharge requirements; 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.
 - c. The Discharger shall attach all final laboratory reports from all contracted commercial laboratories, including quality assurance/quality control information, with all its SMRs for which sample analyses were performed.
7. The Discharger shall submit in the SMRs calculations and reports in accordance with the following requirements:
 - a. **Calendar Annual Average Limitations.** For constituents with effluent limitations specified as “calendar annual average” (electrical conductivity) the Discharger shall report the calendar annual average in the December SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.
 - b. **Mass Loading Limitations.** For BOD₅, 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:
$$\text{Mass Loading (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34$$

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.
 - c. **Removal Efficiency (BOD₅ and TSS).** The Discharger shall calculate and report the percent removal of BOD₅ and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.
 - d. **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.C of the Waste Discharge Requirements.

- e. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall report monthly in the self-monitoring report the dissolved oxygen concentrations in the effluent (EFF-001) and the receiving water (RSW-001 and RSW-002).
- f. **Turbidity Receiving Water Limitations.** The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.18.a-e. of the Waste Discharge Requirements.
- g. **Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.

C. Discharge Monitoring Reports (DMR's)

DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMR's together with SMR's using Electronic Self-Monitoring Reports module eSMR 2.5 or any upgraded version. Electronic DMR submittal will be in addition to electronic SMR submittal. [Information about electronic DMR submittal](http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/) is available at the DMR website at: (http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/).

D. Other Reports

1. **Annual Operations Report.** The Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing the following by the due date in the Technical Reports Table:
 - 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.
2. **Technical Report Submittals.** This Order includes requirements to submit a Report of Waste Discharge (ROWD), special study technical reports, progress

reports, and other reports identified in the MRP (hereafter referred to collectively as “technical reports”). The Technical Reports Table below summarizes all technical reports required by this Order and the due dates for submittal. All technical reports shall be submitted electronically via CIWQS submittal. Technical reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment.

Table E-11. Technical Reports

Report #	Technical Report	Due Data	CIQWS Report Name
	Standard Reporting Requirements		
1	Report of Waste Discharge	30 November 2023	ROWD
2	Analytical Methods Report	30 January 2020	MRP X.D.3
3	Annual Operations Report	1 February 2020	MRP X.D.4
4	Annual Operations Report	1 February 2021	MRP X.D.4
5	Annual Operations Report	1 February 2022	MRP X.D.4
6	Annual Operations Report	1 February 2023	MRP X.D.4
7	Annual Operations Report	1 February 2024	MRP X.D.4
	Other Reports		
8	Toxicity Reduction Evaluation (TRE) Workplan	29 February 2020	WDR VI.C.2.a.i
9	Salinity Evaluation and Minimization Plan	30 November 2023	WDR VI.C.3.d

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, 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 discusses 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

Waste Discharge ID:	5A450100001
CIWQS Facility Place ID:	205741
Discharger:	City of Anderson
Name of Facility:	Water Pollution Control Plant
Facility Address:	3701 Rupert Road
Facility City, State Zip:	Anderson, CA 96007
Facility County:	Shasta County
Facility Contact, Title and Phone Number:	Phil DeBlasio, Chief Plant Operator, (530) 378-6665
Authorized Person to Sign and Submit Reports:	Phil DeBlasio, Chief Plant Operator, (530) 378-6665 and Nick Jones, Plant Supervisor (530) 378-6664
Mailing Address:	1877 Howard Street, Anderson, CA 96007
Billing Address:	Same as Mailing Address
Type of Facility:	Publicly Owned Treatment Works (POTW)
Major or Minor Facility:	Major
Threat to Water Quality:	1
Complexity:	A
Pretreatment Program:	No
Recycling Requirements:	Not Applicable
Facility Permitted Flow:	2.0 million gallons per day (MGD), average dry weather flow
Facility Design Flow:	2.0 MGD
Watershed:	Sacramento-Lower Cow-Lower Clear
Receiving Water:	Sacramento River
Receiving Water Type:	Inland Surface Water

- A.** The City of Anderson (hereinafter Discharger) is the owner and operator of the City of Anderson, Water Pollution Control Plant (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 Sacramento River, a water of the United States, within the Sacramento-Lower Cow-Lower Clear watershed. The Discharger was previously regulated by Order R5-2014-0100 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0077704 adopted on 8 August 2014 and expired 30 September 2019. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.
- C.** When applicable, state law requires dischargers to file a petition with the State Water Board, Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce any applicable requirements under Water Code section 1211. This is not an NPDES permit requirement.
- D.** The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its waste discharge requirements (WDR's) and NPDES permit on 13 March 2019. Supplemental information was requested by Central Valley Water Board staff on 8 April 2019 and received from the Discharger on 10 April 2019. Central Valley Water Board staff conducted written and verbal correspondence with the Discharger from 11 April 2019 through 24 April 2019 to finalize all sections of the ROWD. The application was deemed complete on 2 May 2019.
- E.** Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, Table 3 of this Order limits the duration of the discharge authorization. Under 40 C.F.R. section 122.6(d), States authorized to administer the NPDES program may administratively continue State-issued permits beyond their expiration dates until the effective date of the new permits, if State law allows it. Pursuant to California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all federal NPDES requirements for continuation of expired permits.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Anderson and serves a population of approximately 10,700. The design daily average flow capacity of the Facility is 2.0 million gallons per day (MGD).

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility consists of a headworks with one mechanical bar screen, a backup manual screen, a backup comminutor, two activated sludge aeration basins, two secondary clarifiers, one ballast pond to equalize flow to the pressure filters, three pressurized multi-media filtration units, one chlorine contact basin, and

sulfur dioxide dechlorination. Treated effluent is discharged to the Sacramento River through a multiport diffuser.

The influent pump station and headworks includes a bar screen which removes large debris and rags, a back up comminator, and a manual bar rake for screenings. In the event of a total screening failure, a high level alarm will sound and flow will overflow to the emergency basin shortly thereafter. The Facility's total emergency storage capacity is 5.3 million gallons (MG) except during May through September when sludge drying reduces the available emergency storage to 3.0 MG.

Flow from the headworks is distributed evenly between the two aeration basins. From the aeration basins, flow enters a distribution box where the waste stream is distributed between the two clarifiers. Flow from the clarifiers enters a weir box where the Parshall flume is located. The Parshall Flume is used to report influent flow but does not account for RAS (return activated sludge) flow because the meter takes measurements after the secondary clarifiers. Flow is directed from the secondary clarifiers to the ballast pond and pressure filters. Flow can be directed from the ballast pond to the emergency storage if needed.

After filtration, two chlorinators supply a gas solution for disinfection. The chlorine dosing is applied at beginning of the contact chamber. The chlorine gas solution can also be routed to the influent manhole for odor control or used for algae control in clarifier launders. Contact chamber discharge is dosed with a sulfur dioxide gas solution for dechlorination.

Biosolids processing consists of the following: 25 to 40 days standard retention time (SRT) aerobic digestion, pond stabilization, and solar drying. On average, 115 dry metric tons of biosolids are produced annually. Class B pathogen reduction is achieved at the Facility. Dried biosolids are disposed at Anderson Landfill and/or land applied on Fields A1 and A2 North Gate within boundaries of the Redding Municipal Airport, property owned by the City of Redding pursuant to WDRs Order No. 5-01-226 Biosolids are applied to soil within 7 days of arrival and incorporated into the soil within 7 days.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 11, T30N, R4W, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point No. 001 to the Sacramento River, a water of the United States at a point latitude 40° 28' 8" N and longitude 122° 16' 45" W.

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

Effluent limitations contained in Order R5-2014-0100 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2014-0100 are as follows:

**Table F-2. Historic Effluent Limitations and Monitoring Data
Monitoring Data - October 2014-March 2019)**

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	AMEL 2.0	5.22 ¹	--	--
Conventional Pollutants	--	--	--	--	--
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	% Removal	AMEL 85	95.5 ³	--	--
BOD	mg/L	AMEL 10 AWEL 15 MDEL 30	12	12	12
BOD	lbs/day ²	AMEL 167 AWEL 250 MDEL 500	122	122	126
pH	SU	MDEL 6.0-8.5	--	--	6.26 - 7.86
Total Suspended Solids (TSS)	% Removal	AMEL 85	91.5 ³	--	--
TSS	mg/L	AMEL 10 AWEL 15 MDEL 30	5.2	12.7	12.7
TSS	lbs/day ²	AMEL 167 AWEL 250 MDEL 500	78	143	143
Priority Pollutants	--	--	--	--	--
Chlorodibromomethane	µg/L	AMEL 14 MDEL 28	3.34	--	3.34
Copper, Total Recoverable	µg/L	AMEL 29 MDEL 43	12.5	--	12.5
Dichlorobromomethane	µg/L	AMEL 28 MDEL 54	16.4	--	16.4
Zinc, Total Recoverable	µg/L	AMEL 125 MDEL 179	76.8	--	76.8
Non-Conventional Pollutants	--	--	--	--	--
Ammonia Nitrogen, Total (as N)	mg/L	AMEL 9.0 MDEL 22	0.15	--	0.5
Ammonia Nitrogen, Total (as N)	lbs/day ²	AMEL 150 MDEL 370	1.4	--	2.5
Nitrate Plus Nitrite	mg/L	AMEL 40	19.4	--	--
Total Residual Chlorine	mg/L	AWEL 0.011 ⁴ MDEL 0.019 ⁵	--	--	0.009

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Total Coliform Organisms	MPN/ 100 ml	AMEL 240 ⁶ AWEL 23 ⁷ MDEL 500 ⁸	8	122	250
Acute Whole Effluent Toxicity	% Survival	MDEL 70 ⁹ /90 ¹⁰	--	--	100 ¹¹

1. Represents the maximum observed average daily flow.
2. Based on an average dry weather flow of 2.0 million gallons per day (MGD)
3. Represents the minimum observed percent removal.
4. Applied as a 4-day average effluent limitation.
5. Applied as a 1-hour average effluent limitation.
6. Not to be exceeded more than once in a 30-day period.
7. Applied as a 7-day median.
8. Not to be exceeded at any time.
9. Minimum for any one bioassay.
10. Median for any three consecutive bioassays
11. Represents the minimum observed percent survival.

D. Compliance Summary

A Compliance Evaluation Inspection (CEI) was performed on 3 October 2018. Major findings from the inspection include the following:

1. The Parshall flume is not located at the influent channel, it is located at the distribution box where flow is directed from the secondary clarifiers to the ballast pond and pressure filters. The Parshall flume is used to report influent flow but does not account for RAS (return activated sludge) flow because the meter takes measurements after the secondary clarifiers
2. The generator relies on a natural gas utility connection for its fuel supply and can only produce enough power to operate the influent pumps.

The Facility has had 14 violations recorded in CIWQS between October 2014 and March 2019. All recorded violations were for total coliform exceedances. The total coliform 7-day median was exceeded 13 times and the total coliform daily maximum was exceeded once. Some of these violations are subject to mandatory minimum penalties (MMPs).

E. Planned Changes

1. The City is currently seeking grant funding for several plant improvements including the following: replacing filter pumps and

motors with higher efficiency pumps, replacement of chlorination/dechlorination chamber with a UV disinfection system, solar panel installation as well as some interior lighting upgrades. Additionally, a 400 kW generator has been purchased and is expected to be installed in the first quarter of 2020. Depending on the acceptance and approval date of grant, the upgrades are scheduled to be completed as follows:

- | | |
|---|-------------------------|
| a. Submittal of grant application to SWRCB | August 2019 |
| b. Request bids for plan engineering services | November 2019 |
| c. Completion of engineering plans | March 2020 |
| d. Request for proposals (RFP) | May 2020 |
| e. Order equipment | July 2020- January 2021 |
| f. Site mobilization | April 2021 |
| i. Filter pump installation | May 2021- June 2021 |
| ii. UV system installation | May 2021- July 2021 |
| iii. Solar PV installation | May 2021- July 2021 |
| iv. Lighting installation | May 2021 |
| g. Project closeout | September 2021 |

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 Plan.** 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 for the Sacramento River and San Joaquin River Basins, Fifth Edition, May 2018 (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. 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. Beneficial uses applicable to the Sacramento River are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Sacramento River (Shasta Dam to Colusa Basin Drain)	<u>Existing:</u> Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial service supply (IND); industrial power supply (POW); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN); wildlife habitat (WILD); and navigation (NAV).

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 C.F.R. 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 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") (State Anti-Degradation Policy). The State Anti-Degradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Anti-Degradation Policy 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 C.F.R. section 131.12 and the State Anti-Degradation Policy. The Board finds this order is consistent with the Federal and State Water Board antidegradation regulations and policy.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. 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 permit, with some exceptions in which limitations may be relaxed.
6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
7. **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.
8. **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 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.

- 9. Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 C.F.R. 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 Resources Control Board Water Quality Order 2014-0057-DWQ, General Permit for Storm Water Discharges Associated with Industrial Activities (NPDES General Permit No. CAS000001), does not require facilities to obtain coverage if discharges of storm water are regulated under another individual or general NPDES permit adopted by the State Water Board or Regional Water Board (Finding I.B.20). All storm water at the Facility is captured and directed to the Facility headworks for treatment and disposal under this Order. 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 6 April 2018 U.S. EPA gave final approval to California's 2014-2016 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 C.F.R. 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 listing for the Sacramento River from Keswick Dam to Cottonwood Creek includes unknown toxicity.
2. **Total Maximum Daily Loads (TMDL's).** U.S. EPA 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 Sacramento River

Pollutant	Potential Sources	TMDL Status
Unknown Toxicity	Source Unknown	Unknown

3. The 303(d) listings and TMDL's 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.a of this Fact Sheet.

E. Other Plans, Policies and Regulations

1. **Title 27.** The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 et seq (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
 - a. The waste consists primarily of domestic sewage and treated effluent;
 - b. The waste discharge requirements are consistent with water quality objectives; and
 - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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 C.F.R. § 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 C.F.R. section 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 C.F.R. section 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 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include WQBEL's 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 C.F.R. section 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) U.S. EPA'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 C.F.R. § 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 Section 3.1.20) 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 section 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 C.F.R. section 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 C.F.R. section 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 C.F.R. section 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 C.F.R. section 122.41 et seq. that requires the proper design and operation of treatment facilities
5. **Prohibition III.E (No discharge of hazardous waste).** This prohibition is based on California Code of Regulations, title 22, section 66261.1 et seq, that prohibits discharge of hazardous waste.
6. **Prohibition III.E (Average Dry Weather Flow).** This prohibition is based on the design average dry weather flow treatment capacity rating for the Facility and ensures the Facility is operated within its treatment capacity. Previous Order R5-2014-0100 included flow as an effluent limit based on the Facility design flow. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. 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 C.F.R. part 133.

Regulations promulgated in 40 C.F.R. 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 POTW’s [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 C.F.R. 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 (BOD₅), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

- a. **BOD₅ and TSS.** Federal regulations at 40 C.F.R. part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD₅ and TSS. In addition, 40 C.F.R. section 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 BOD₅ and TSS over each calendar month.
- b. **pH.** The secondary treatment regulations at 40 C.F.R. part 133 also require that pH be maintained between 6.0 and 9.0 standard units. This Order, however, requires more stringent WQBEL's for pH to comply with the Basin Plan's water quality objectives for pH.

Summary of Technology-based Effluent Limitations Discharge Point 001

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

Note that more stringent WQBEL's for BOD₅, pH, and TSS are applicable and are established as final effluent limitations in this Order (see section IV.C.3.c of this Fact Sheet).

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	30	45	--	--	--
BOD	% Removal	85	--	--	--	--
Total Suspended Solids (TSS)	mg/L	30	45	--	--	--
TSS	% Removal	85	--	--	--	--
pH	SU	--	--	--	6.0	9.0

C. Water Quality-Based Effluent Limitations (WQBEL's)

1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. 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 advanced-secondary treatment or equivalent requirements, is discussed in section IV.C.3.c of this Fact Sheet.

Section 122.44(d)(1)(i) of 40 C.F.R. 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, WQBEL's 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 WQBEL's 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.

Finally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available wasteload allocations developed and approved for the discharge.

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 2-1 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. 40 C.F.R. section 131.3(e) 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 C.F.R. 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.
- b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from December 2015 through September 2018 which includes effluent and ambient background data submitted in SMRs, the Report of Waste Discharge (ROWD), etc.
- c. **Assimilative Capacity/Mixing Zone.**
 - i. **Regulatory Guidance for Dilution Credits and Mixing Zones.** The CWA directs states to adopt water quality standards to protect the quality of their waters. U.S. EPA’s current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 C.F.R. sections 122.44 and 122.45). U.S. EPA allows states to have broad flexibility in designing mixing zone policies. Primary policy and guidance on determining mixing zones 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 U.S. EPA 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 TMDL's, 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 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.

- ii. **Sacramento River Characteristics and Diffuser Configuration.** The Facility discharges to the Sacramento River approximately 18 miles downstream of Keswick Dam. The river channel width at the location of the diffuser is at least 359 feet at any receiving water flow. The Facility’s effluent outfall multi-port diffuser extends under the surface water, approximately 30 feet northward from the south bank of the Sacramento River. The diffuser consists of an 18-inch (outside diameter) steel pipe with six 8-inch torch-cut holes (or ports) facing downstream and a seventh similarly sized hole at the end of the pipe pointed northward toward the middle of the river. There are approximately 5 to 7 inches in width between each port. The outfall was designed in 1972 and has been in service after construction in 1974. The harmonic mean flow of the Sacramento River is 6,714 cfs and the average dry weather flow design capacity of the discharge is 2.0 MGD.
- iii. **Dilution/Mixing Zone Study Results.** As described below, the Discharger submitted an initial Mixing Zone Study modeling report and Dye Study in 2006 to determine mixing zone sizes and dilution ratios achieved within each mixing zone. The Discharger submitted an update

to the 2006 Mixing Zone Study in July 2012 which provided dilution ratios for additional delineations within the mixing zone.

- (a) **2006 Modeling Studies.** The Discharger submitted a Mixing Zone Study report on 7 June 2006. The Mixing Zone Study implemented the numeric Cornell Mixing Zone Expert System (CORMIX) computer model to calculate dilution of effluent downstream from the point of discharge into the receiving water. A Dye Study was conducted on 27 January 2006 to provide a comparison to the modeling results.

The 2006 Mixing Zone Study was based on critical effluent flows and critical receiving water flows for combined data from Keswick Dam in Redding (Station No. 11370500) and Clear Creek approximately 10 miles before its confluence with the Sacramento River (Station No. 11372000). The Discharger reviewed data from these stations based on current operating agreements and historical flow data. The Discharger also made adjustments for withdrawals by the Anderson-Cottonwood Irrigation District upstream of the discharge. Information provided in the 2006 Mixing Zone Study is provided in the table below.

- (b) **2012 Mixing Zone Study Update.** The Discharger provided an update to the 2006 Mixing Zone Study with additional dilution delineations from 5 to 800 feet. The Discharger also provided a Biological Evaluation of potential impacts to biological resources as a result of a mixing zone. The Biological Evaluation concluded that a mixing zone up to 300 feet was protective of aquatic life. California Department of Fish and Wildlife reviewed and concurred with the findings of the Biological Evaluation.

A subset of the results presented in the Discharger's 2012 Mixing Zone Study Update, and referenced in this Order, are summarized in the table below:

Table F-6. Mixing Zone/Dilution Study Results

Distance Downstream (ft.)	Acute Dilution Factor	Chronic Dilution Factor	Human Health Dilution Factor
10	5.2	13.9	38.8
30	5.7	14.9	54.8
200	9.4	22.2	110.2
300	10.7	25.6	132.1

- iv. **Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria.** U.S. EPA 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 aquatic life mixing zones for compliance with acute and chronic health water quality criteria for ammonia, cyanide, and zinc. Based on the results of the 2012 Mixing Zone Study Update, the largest acute and chronic aquatic-life mixing zone under evaluation is 300 feet.

The acute and chronic aquatic-life mixing zones of 300 feet and 80 feet, respectively, downstream of the diffuser meet the requirements of the SIP as follows:

- (a) Shall not compromise the integrity of the entire water body – 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 water body (such as a river segment), then mixing zones are likely to have little effect on the integrity of the water body as a whole, provided that the mixing zone does not impinge on unique or critical habitats.”¹ The Sacramento River is approximately 380 feet wide at the diffuser. The largest mixing zone (acute aquatic-life) of 300 feet is less than 20 feet wide near the diffuser outfall and is estimated to be less than 13 feet wide at the furthest downstream edge of the mixing zone. The mixing zones are small relative to the waterbody and 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. U.S. EPA 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 300 feet downstream from the diffuser. The float time at critical low receiving water flow conditions is less than 2.0 minutes². 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.

¹ TSD, pg. 33

² Assuming a current velocity of approximately 2.6 feet per second at critical low flow conditions (2850 cfs) [18 July 2012 Technical Memorandum No.2 – Biological Assessment, Kennedy/Jenks Consultants]

- (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 79 percent of the width (approximately 300 feet²) of the Sacramento 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, they allow for 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 to meet advanced-secondary treatment standards, 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 they will not dominate the water body. The outfall is located less than 1 mile upstream of the City of Redding's Stillwater Wastewater Treatment Facility effluent outfall diffuser; however, the proposed mixing zones do not overlap with the mixing zones from the downstream outfall. There are no other 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.

The acute and chronic aquatic life mixing zones, therefore, comply with the SIP. The mixing zones also comply with the Basin Plan, which requires that the mixing zones 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 zones, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's Water Quality Standards Handbook, 2nd Edition (updated

July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

- v. **Evaluation of Available Dilution for Human Health 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 the 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 mixing zone.

Based on the results of the 2012 Mixing Zone Study Update, the largest human health mixing zone granted is 300 feet. The width of the human health mixing zone is less than 20 feet. The human health criteria mixing zone meets the requirements of the SIP as follows:

- (a) Shall not compromise the integrity of the entire water body – 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 water body (such as a river segment), then mixing zones are likely to have little effect on the integrity of the water body as a whole, provided that the mixing zone does not impinge on unique or critical habitats."³ 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 water body.
- (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

³ TSD, pg. 33

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.
- (g) Shall not be allowed at or near any drinking water intake – The human health mixing zone is not near a drinking water intake.

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 U.S. EPA's Water Quality Standards Handbook, 2nd Edition (updated July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

- vi. **Final Dilution Credits.** The final dilution credits and associated mixing zones lengths for each pollutant receiving dilution credit(s) are summarized in the table below. The dilution credits allowed in this Order are in accordance with Section 1.4.2.2 of the SIP and are a discretionary act by the Central Valley Water Board.

Table F-7. Final Dilution Credits

Parameter	Units	Acute Dilution Credit	Chronic Dilution Credit	Human Health Dilution Credit	Acute ¹	Chronic ¹	Human Health ¹
Ammonia Nitrogen, Total (as N)	mg/L	5.5	4.5	--	20	<5	--
Chlorodibromomethane	µg/L	--	--	40.9	--	--	<20
Cyanide	µg/L	5.5	17	--	20	<80	--
Dichlorobromomethane	µg/L	--	--	65.2	--	--	<60
Copper, Total Recoverable	µg/L	10.7	25.6	--	300	300	--
Nitrate plus Nitrite (as N)	mg/L	--	--	3	--	--	<10
Zinc, Total Recoverable	µg/L	10.7	--	--	300	--	--

¹ Mixing Zone/Distance Downstream (ft.)

- vii. **Regulatory Compliance for Dilution Credits and Mixing Zones.** To fully comply with all applicable laws, regulations and policies of the state,

the Central Valley Water Board-approved mixing zones and the associated dilution credits are 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 studies 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 studies conducted by the Discharger, the Central Valley Water Board has determined the mixing zones are as small as practicable.
- (c) In accordance with section 1.4.2.2 of the SIP, the Central Valley Water Board has determined the mixing zones are as small as practicable and 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 zones are small relative to the large size of the receiving water and do not overlap a mixing zone from a different outfall. Additionally, there are no known downstream drinking water intakes.
- (d) The Central Valley Water Board is allowing mixing zones for acute aquatic life, chronic aquatic life, and human health constituents, and has determined allowing such mixing zones will not cause acutely toxic conditions to aquatic life passing through the mixing zone.
- (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 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 BOD₅ 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 mixing zones and dilution credits, 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 zones and dilution credits are adequately protective of the beneficial uses of the receiving water.
- (g) The Central Valley Water Board has determined the mixing zones comply with the SIP for priority pollutants.

- (h) 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 full allowance of dilution is not needed or necessary for the Discharger to achieve compliance with effluent limitations for all constituents in this Order.
- (i) The Central Valley Water Board has determined the mixing zones comply 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 zones, the Central Valley Water Board has considered the procedures and guidelines in section 5.1 of U.S. EPA’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 Antidegradation Policy for receiving waters outside the allowable mixing zone for ammonia, chlorodibromomethane, dichlorobromomethane, zinc, nitrate plus nitrite, and cyanide. The State Antidegradation Policy 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 the State Antidegradation Policy states:

“Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes 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 effluent limitations established in the Order for ammonia, chlorodibromomethane, dichlorobromomethane, zinc, nitrate plus nitrite, and cyanide have been adjusted for dilution credits based on Facility performance. The Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing BPTC 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. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations.

viii. Therefore, the Central Valley Water Board has determined the effluent limitations established in this Order for ammonia, chlorodibromomethane, dichlorobromomethane, zinc, copper, nitrate plus nitrite, and cyanide, which have been adjusted for dilution credits, are appropriate and necessary to comply with the Basin Plan, SIP, federal antidegradation regulations and the State Antidegradation Policy

- a. **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. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. For priority pollutant metals, the SIP requires the use of U.S. EPA conversion factors contained in Appendix 3 to convert the applicable dissolved criteria to total recoverable criteria. Alternatively, the SIP allows the use of site-specific metals translators that "...can be developed from field data by either direct determination of the fraction dissolved, or by development of a site-specific partition coefficient that relates the fraction dissolved to ambient background conditions such as pH, suspended load, or organic carbon."

Order R5-2014-0100 allowed site-specific metals translators for copper and zinc based on a July 2012 translator study. Order R5-2014-0100 required the Discharger to submit a site-specific translator update with the permit renewal application. Receiving water data was collected from monitoring location RSW-001 and tested for total recoverable and dissolved copper and zinc. Based on this data, the Discharger submitted a 1 February 2019 translator study update, developed in accordance with SIP and U.S. EPA guidance, proposing updated site-specific translators for copper and zinc. The Central Valley Water Board has reviewed the updated study and finds that the proposed translators are appropriate. Therefore, the updated translators have been used for copper and zinc in this Order. The table below summarizes the previous and updated site-specific translators:

Table F-8. Site-Specific Translators for Copper and Zinc

Parameter	Aquatic Life Criteria	Translator 2014 Permit	Translator 2019 Update
Copper	Acute	0.94	0.81
Copper	Chronic	0.78	0.69
Zinc	Acute	0.71	0.72
Zinc	Chronic	0.62	0.59

The default U.S. EPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria for the remaining metals.

- b. **Hardness-Dependent CTR Metals Criteria.** The CTR and the NTR 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 hardness of the receiving water (actual ambient hardness) as required by the SIP⁴ and the CTR⁵. The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones⁶. Design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10)⁷. This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a three-year period on average⁸. The CTR requires that when mixing zones are allowed the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.⁹ The CTR does not define the term “ambient,” as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully complies with the CTR and SIP.

Summary findings

The ambient hardness for the Sacramento River is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 35 mg/L to 79 mg/L based on 37 samples collected from December 2015 through September 2018. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central Valley Water Board has discretion to select ambient hardness values within the range of 35 mg/L (minimum) up to 79 mg/L (maximum). Staff recommends that the Board use the ambient hardness values shown in Table F-6 for the following reasons.

⁴ 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.

⁵ The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. § 131.38(c)(4)).

⁶ 40 C.F.R. §131.3(c)(4)(ii)

⁷ 40 C.F.R. §131.38(c)(2)(iii) Table 4

⁸ 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

⁹ 40 C.F.R. §131.38(c)(2)(i)

- i. Using the ambient receiving water hardness values shown in Table F-6 will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.
- ii. The Water Code mandates that the Central Valley Water Board establish permit terms that will ensure the reasonable protection of beneficial uses. In this case, using the lowest measured ambient hardness to calculate effluent limitations is not required to protect beneficial uses. Calculating effluent limitations based on the lowest measured ambient hardness is not required by the CTR or SIP, and is not reasonable as it would result in overly conservative limits that will impart substantial costs to the Discharger and ratepayers without providing any additional protection of beneficial uses. In compliance with applicable state and federal regulatory requirements, after considering the entire range of ambient hardness values, Board staff has used the ambient hardness values shown in Table F-6 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.
- iii. Using an ambient hardness that is higher than the minimum of 35 mg/L will result in limits that may allow increased metals to be discharged to the river, but such discharge is allowed under the State Antidegradation Policy (State Water Board Resolution 68-16). The Central Valley Water Board finds that this degradation is consistent with the antidegradation policy (see antidegradation findings in Section IV.D.4 of the Fact Sheet). The Antidegradation policy requires the Discharger 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.
- iv. Using the ambient hardness values shown in Table F-6 is consistent with the CTR and SIP's requirements for developing metals criteria.

Table F-9. Summary of CTR Criteria for Hardness-dependent Metals

CTR Metals	Ambient Hardness (mg/L)^{2,3}	Acute CTR Criteria (µg/L, total recoverable)¹	Chronic CTR Criteria (µg/L, total recoverable)¹
Copper	35	5.2	3.8
Chromium III	35	740	88
Cadmium	35 (acute) 35 (chronic)	1.4	1.1
Lead	35	22	0.84
Nickel	35	190	22
Silver	35	0.67	--
Zinc	35	49	49

- ¹ Metal criteria rounded to two significant figures in accordance with the CTR (40 C.F.R. §131.38(b)(2)).
- ² The ambient hardness values in this table represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.
- ³ The CTR's hardness dependent metals criteria equations vary differently depending on the metal, which results in differences in the range of ambient hardness values that may be used to develop effluent limitations that are protective of beneficial uses and comply with CTR criteria for all ambient flow conditions.

Background

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant (Davis Order) and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant (Yuba City Order). The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness so long as the selected value is protective of water quality criteria under the given flow conditions. (Davis Order, p.10). The State Water Board explained that it is necessary that, "The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions." (Yuba City Order, p. 8). The Davis Order also provides that, "Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions." (Davis Order, p. 11)

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

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

Where:

H = ambient hardness (as CaCO_3)¹⁰

WER = water-effect ratio

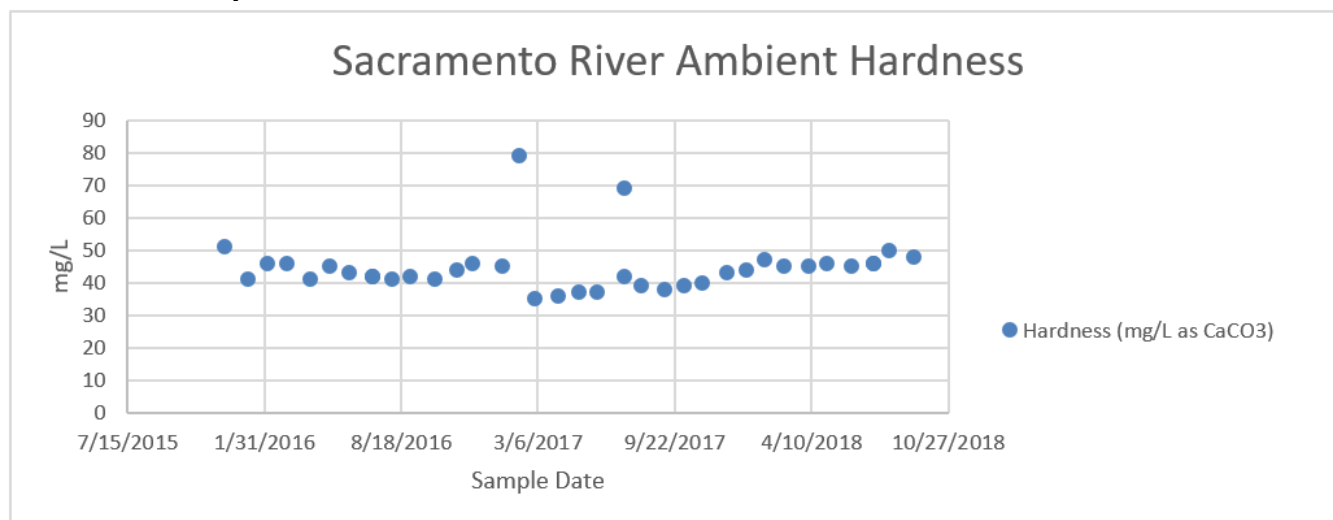
m, b = metal- and criterion-specific constants

The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected “design” hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a three year period.¹¹ Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10). The 1Q10 and 7Q10 Sacramento River flows are 2493.95 cfs and 2590.429 cfs, respectively.

Ambient conditions

The ambient receiving water hardness varied from 35 mg/L to 79 mg/L, based on 37 samples from December 2015 through September 2018 (see Figure F-1).

Figure F-1. Observed Ambient Hardness Concentrations December 2015-September 2018



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-1 were considered to determine the appropriate ambient hardness to

¹⁰ For this discussion, all hardness values are expressed in mg/L as CaCO_3 .

¹¹ 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

calculate the CTR criteria and effluent limitations that are protective under all discharge conditions.

Approach to Derivation of Criteria

As shown above, ambient hardness is somewhat variable. Because of the variation, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum, mid-point). While the hardness selected must be hardness of the ambient receiving water, selection of an ambient receiving water hardness that is too high would result in effluent limitations that do not protect beneficial uses. Also, the use of minimum ambient hardness would result in criteria that are protective of beneficial uses, but such criteria may not be representative considering the wide range of ambient conditions.

Reasonable worst-case ambient conditions. To determine whether a selected ambient hardness value results in effluent limitations that are fully protective while complying with federal regulations and state policy, staff have conducted an analysis considering varying ambient hardness and flow conditions. To do this, the Central Valley Water Board has ensured that the receiving water hardness and criteria selected for effluent limitations are protective under “reasonable-worst case ambient conditions.” These conditions represent the receiving water conditions under which derived effluent limitations would ensure protection of beneficial uses under all ambient flow and hardness conditions.

Reasonable worst-case ambient conditions:

- “Low receiving water flow.” CTR design discharge conditions (1Q10 and 7Q10) have been selected to represent reasonable worst-case receiving water flow conditions.
- “High receiving water flow (maximum receiving water flow).” This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.
- “Low receiving water hardness.” The minimum receiving water hardness condition of 35 mg/L was selected to represent the reasonable worst-case receiving water hardness.
- “Background ambient metal concentration at criteria.” This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the facility’s discharge). Based on data in the record, this is a design condition that does not regularly occur in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

Approach to Derivation of Criteria Where No Dilution Allowed

As shown in Table F-9 above, an ambient hardness value of 35 mg/L, which represents the minimum ambient hardness value observed in the Sacramento

River from December 2015 through September 2018, was selected to calculate CTR hardness-dependent metals criteria. Using this hardness value, which is an actual sample result collected in the receiving water, will result in effluent limitations that are protective under all ambient flow conditions. Nickel and silver are used as examples below to illustrate the results of the analysis. Tables F-10 and F-11, below, summarize the numeric results of the three-step iterative approach for nickel and silver. As shown in the example tables, an ambient hardness value of 35 mg/L is used in the CTR equations to derive criteria and effluent limitations for nickel and silver. Then, under the “check” step, worst-case ambient receiving water conditions are used to test whether discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the above analysis, summarized in the tables below, show that the design ambient hardness value of 35 mg/L results in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-10 and F-11, below, summarize the critical flow conditions. However, the analysis evaluated all flow conditions to ensure compliance with the CTR criteria at all times.

**Table F-10. Verification of CTR Compliance for Nickel
Downstream Ambient Concentrations
Under Worst-Case Ambient Receiving Water Conditions**

Receiving water hardness used to compute effluent limitations= 35 mg/L
Effluent Concentration Allowance (ECA) for Nickel¹= 21.5 mg/L

Critical Flow Conditions	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration² (µg/L)	Complies with CTR Criteria?
1Q10	35.1	21.7	21.5	Yes
7Q10	35	21.5	21.5	Yes
Max receiving water flow	35	21.5	21.5	Yes

¹ The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There is no effluent limitation for nickel as it demonstrates no reasonable potential.

² This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

**Table F-11. Verification of CTR Compliance for Silver
Downstream Ambient Concentrations
Under Worst-Case Ambient Receiving Water Conditions**

Receiving water hardness used to compute effluent limitations= 35 mg/L
Effluent Concentration Allowance (ECA) for Silver¹= 0.67 mg/L

Critical Flow Conditions	Hardness	CTR Criteria (µg/L)	Ambient Silver Concentration ² (µg/L)	Complies with CTR Criteria?
1Q10	35.1	0.669	0.667	Yes
7Q10	35	0.669	0.667	Yes
Max receiving water flow	35	0.667	0.667	Yes

- ¹ The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There is no effluent limitation for silver as it demonstrates no reasonable potential.
- ² This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria

Approach to Derivation Where Dilution Allowed

As discussed in section IV.C.2.c, above, dilution credits for copper and zinc have been allowed in the calculation of WQBEL's for these hardness-dependent criteria parameters. The allowed copper and zinc dilution credits for acute aquatic life criteria is 10.7:1, which represents an effluent fraction of 8.5%. These values define the points in the receiving water (i.e., edge of mixing zone) that must be in compliance with aquatic life criteria. When the effluent and receiving water are at their respective minimum hardness values (i.e., 76 mg/L and 35 mg/L as CaCO₃, respectively), and the effluent fraction is 8.5%, the mixed hardness is 38.5 mg/L. An actual observed ambient hardness of 35 mg/L (as CaCO₃) has been used in this Order for calculating hardness-dependent copper and zinc chronic criteria based on the minimum ambient hardness value observed in the Sacramento River from December 2015 through September 2018. Using the ambient hardness to calculate the hardness-dependent metals criteria is consistent with the CTR and the SIP.

Tables F-12 and F-13 below, demonstrate that protective effluent limitations result when using this approach for determining the appropriate hardness. In this example the mixed receiving water copper and zinc concentrations do not exceed the mixed CTR criteria for copper and zinc at the edge of the mixing zone.

Table F-12. Verification of CTR Compliance for Copper
Downstream Ambient Concentrations
Under Worst-Case Ambient Receiving Water Conditions

Minimum Ambient Background Hardness= 35 mg/L
Minimum Effluent Hardness= 76 mg/L
Acute Aquatic Life Dilution Credit= 10.7:1
Maximum Ambient Background Copper Concentration= 3.0 µg/L
Effluent Concentration Allowance (ECA) for Copper¹= 32 µg/L

Effluent Fraction ²	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration ³ (µg/L)	Complies with CTR Criteria?
1.0%	35.41	5.2	3.2	Yes
5.0%	37.05	5.5	4.2	Yes
7.0%	37.87	5.6	4.6	Yes
8.5%	38.50	5.7	4.98	Yes

¹ ECA calculated per section 1.4 of the SIP.

² Table shows effluent fractions ranging from 1% to 8.5% to show conditions outside the approved mixing zone for copper.

³ This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

Table F-13. Verification of CTR Compliance for Zinc
Downstream Ambient Concentrations
Under Worst-Case Ambient Receiving Water Conditions

Minimum Ambient Background Hardness= 35 mg/L
Minimum Effluent Hardness= 76 mg/L
Acute Aquatic Life Dilution Credit= 10.7:1
Maximum Ambient Background Zinc Concentration= 7.2 µg/L
Effluent Concentration Allowance (ECA) for Zinc¹= 126 µg/L

Effluent Fraction ²	Hardness	CTR Criteria (µg/L)	Ambient Zinc Concentration ³ (µg/L)	Complies with CTR Criteria?
1.0%	35.4	14.5	8.0	Yes
5.0%	37.1	15	11.4	Yes
7.0%	37.9	15.3	13	Yes
8.5%	38.5	15.5	14.3	Yes

¹ ECA calculated per section 1.4 of the SIP.

² Table shows effluent fractions ranging from 1% to 8.5% to show conditions outside the approved mixing zone for zinc.

Effluent Fraction ²	Hardness	CTR Criteria (µg/L)	Ambient Zinc Concentration ³ (µg/L)	Complies with CTR Criteria?
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³ This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

3. Determining the Need for WQBEL's

Clean Water Act section 301(b)(1)(C) requires effluent limitations necessary to meet water quality standards, and 40 C.F.R. § 122.44(d) requires NPDES permits to include conditions that are necessary to achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality. Federal regulations at 40 C.F.R. 122.44(d)(1)(i) state, "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 that 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." Additionally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available wasteload allocations developed and approved for the discharge. The process to determine whether a WQBEL is required as described in 40 C.F.R. § 122.44(d)(1)(i) is referred to as a reasonable potential analysis or RPA. Central Valley Water Board staff conducted RPA's for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. This section includes details of the RPA's for constituents of concern for the Facility. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board is not restricted to one particular RPA method, therefore, the RPA's have been conducted based on EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

(a) Constituents with Total Maximum Daily Load (TMDL).

40 C.F.R. § 122.44(d)(1)(vii) provides: "When developing water quality-based effluent limits under [§ 122.44(d)(1)], the permitting authority shall ensure that: (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards; and (B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to [Total Maximum Daily Loads regulations]." U.S. EPA construes 40 C.F.R. § 122.44(d)(1)(vii)(B) to mean that "when WLAs are available, they must be used to translate water quality standards into NPDES permit limits." 54 Fed. Reg. 23868, 23879 (June 2, 1989).

The Sacramento River is subject to TMDLs for diazinon and chlorpyrifos and wasteload allocations under those TMDLs are available. The Central Valley Water Board developed WQBEL's for these pollutants pursuant to 40 C.F.R. section 122.44(d)(1)(vii), which does not require or contemplate a reasonable potential analysis.

i. **Diazinon and Chlorpyrifos**

- (a) **WQO.** The Central Valley Water Board recently completed a TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers 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 and Feather Rivers was adopted by the Central Valley Water Board on 3 May 2007 and became effective on 11 August 2008.

The amendment modifies the Basin Plan Chapter III (Water Quality Objectives) to establish site specific numeric objectives for chlorpyrifos and diazinon in the Sacramento and Feather Rivers. 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 provides that: "The Waste Load Allocations (WLA) 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 the point source discharge

C_C = chlorpyrifos concentration in µg/L of the 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.

- (b) **RPA Results.** Diazinon was not detected in the effluent based on six samples collected from December 2015 through September 2018. Diazinon was not detected in the upstream receiving water based on three samples collected from December 2015 through September 2018.

Chlorpyrifos was not detected in the effluent based on six samples collected from December 2015 through September 2018. Chlorpyrifos was not detected in the upstream receiving water based on three samples collected from December 2015 through September 2018.

Although diazinon and chlorpyrifos were not detected in the effluent or receiving water, due to the TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers, WQBEL's for these constituents are required. The TMDL WLA applies to all NPDES dischargers to the Sacramento River from Shasta Dam to Colusa Basin Drain and will serve as the basis for WQBEL's for this Facility.

- (c) **WQBEL's.** WQBEL's for diazinon and chlorpyrifos are required based on the TMDL for diazinon and chlorpyrifos for the Sacramento and Feather Rivers. Therefore, this Order includes effluent limits calculated based on the WLA's contained in the TMDL, as follows:

- (1) Average Monthly Effluent Limitation (AMEL)

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

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

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

- (2) Average Weekly Effluent Limitation (AWEL)

$$S_{AWEL} = \frac{C_{D\text{ W-AVG}}}{0.14} + \frac{C_{C\text{ W-AVG}}}{0.021} \leq 1.0$$

$C_{D\text{ W-AVG}}$ = average weekly diazinon effluent concentration in $\mu\text{g/L}$

$C_{C\text{ W-AVG}}$ = average weekly chlorpyrifos effluent concentration in $\mu\text{g/L}$

- (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.

- a. **Constituents with No Reasonable Potential.** Central Valley Water Board staff conducted reasonable potential analyses for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. All reasonable potential analyses are included in the administrative record and a summary of the constituents of concern is provided in Attachment G. WQBEL's are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an instream excursion of an applicable water quality objective; 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. This section only provides the rationale for the RPA's for the following constituents of concern that were found to have no reasonable potential after assessment of the data:

i. **Dalapon**

- (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 concentrations 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.
- (b) **RPA Results.** The maximum effluent concentration (MEC) for Dalapon was 1.8 µg/L based on four samples between November 2016 and July 2017. The maximum observed upstream receiving water concentration was <0.1 µg/L (non-detect).
- (c) **WQBELs.** The Central Valley Water Board generally calculates WQBELs in accordance with SIP procedures for non-CTR constituents, but has the discretion to use other approaches such as those included in US EPA's Technical Support Document (TSD). Dalapon is a non-CTR constituent. In this case it is appropriate to consider the significant dilution and assimilative capacity available in the receiving water when determining whether or not an effluent limit is needed. There is no reasonable potential for the discharge to cause Dalapon to be present in the receiving water in exceedance of Basin Plan objectives. Therefore, no effluent limit has been established. Routine monitoring is included.

ii. **Diquat**

- (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 concentrations 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.

- (b) **RPA Results.** The maximum effluent concentration (MEC) for Diquat was 1.1 µg/L (DNQ) based on four samples between November 2016 and July 2017. The maximum observed upstream receiving water concentration was <0.1 µg/L (non-detect).
- (c) **WQBELs.** The Central Valley Water Board generally calculates WQBELs in accordance with SIP procedures for non-CTR constituents, but has the discretion to use other approaches such as those included in US EPA's Technical Support Document (TSD). Diquat is a non-CTR constituent. In this case it is appropriate to consider the significant dilution and assimilative capacity available in the receiving water when determining whether or not an effluent limit is needed. There is no reasonable potential for the discharge to cause Diquat to be present in the receiving water in exceedance of Basin Plan objectives. Therefore, no effluent limit has been established. Routine monitoring is included.

iii. Salinity

- (a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no U.S. EPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply.

Table F-14. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective¹	Secondary MCL²	U.S. EPA NAWQC	Effluent Average³	Effluent Maximum
Chloride	Varies	250, 500, 600	860 1-hr 230 4-day	43.4	46.2
Electrical Conductivity (µmhos/cm) or Total Dissolved Solids (mg/L)	Varies	EC: 900, 1600, 2200 or TDS: 500, 1000, 1500	N/A	370	455
Sulfate (mg/L)	Varies	250, 500, 600	N/A	32.3	62

- ¹ Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality Objectives, Section 4.2.2.1.9 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.
- ² The secondary MCLs are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.
- ³ Maximum calendar annual average.
- (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 NAWQC acute criterion for the protection of freshwater aquatic life for chloride is 860 mg/L and the chronic criterion is 230 mg/L.
- (2) **Electrical Conductivity or Total Dissolved Solids.** The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum, or when expressed as TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The Basin Plan contains a site-specific EC limit of 230 µmhos/cm (50th percentile) and µmhos/cm (90th percentile) for the Sacramento River at Knights Landing above Colusa Basin Drain.

- (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.

(b) **RPA Results.**

- (1) **Chloride.** Chloride concentrations in the effluent ranged from 42 mg/L to 46.2 mg/L, with an average of 43.4 mg/L based on three samples collected from December 2015 through September 2018. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 1.34 mg/L to 1.92 mg/L, with an average of 1.71 mg/L, based on three samples collected by the Discharger from December 2015 through September 2018. Based on this data the discharge does not have reasonable potential to cause or contribute to the applicable objectives for chloride.
- (2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows an average effluent EC of 370 µmhos/cm, with a range from 271 µmhos/cm to 455 µmhos/cm. The background receiving water EC averaged 119.2 µmhos/cm based on 34 samples taken from December 2015 through September 2018. Based on this data the discharge does not have reasonable potential to cause or contribute to the applicable objectives for EC.

Total dissolved solids concentrations in the effluent ranged from 213 mg/L to 310 mg/L, with an average of 267.4 mg/L, based on 9 samples collected from December 2015 through September 2018. The background receiving water TDS ranged from 70 mg/L to 80 mg/L, with an average of 75.1 mg/L based on 9 samples collected from December 2015 through September 2018, which does not exceed the Secondary MCL recommended level. This demonstrates the discharge does not cause or contribute to an exceedance of the Secondary MCL in the Sacramento River.

- (3) **Sulfate.** Sulfate concentrations in the effluent ranged from 20.2 mg/L to 62 mg/L, with an average of 32.3 mg/L based on seven samples between July 2016 and July 2018. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 3 mg/L to 4.3 mg/L, with an average of 3.63 mg/L based on seven samples from December 2015 through September 2018. Based on this data the discharge does not have reasonable potential to cause or contribute to the applicable objectives for sulfate.
- (c) **WQBELs.** When only considering the numeric water quality standards for salinity and the concentration of salinity coming from the discharge, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of

water quality objectives for salinity. However, since the Discharger discharges to the Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. The EC concentration of the effluent is greater than the background concentration observed in the Sacramento River, therefore limited degradation is occurring in a high quality water. Under the State Anti-Degradation Policy, the waste discharge requirements must result in the best practicable treatment or control (BPTC) 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. In this case, the Discharger is currently utilizing BPTC, and a performance-based effluent limitation of 430 $\mu\text{mhos/cm}$ for EC to be applied as an annual average will limit the discharge to current levels (thus ensuring that BPTC will continue to be met). This interim performance-based effluent limitation represents the maximum annual average effluent EC concentration plus ten percent for a calendar year using data from 2016 through 2018. Ten percent is added to the maximum annual average to ensure that the EC of the Facility's discharge does not increase over time.

- iv. **Plant Performance and Attainability.** Based on the analysis of existing effluent data, the maximum annual average of 390 $\mu\text{mhos/cm}$ occurred during the year 2018. Based on the sample results for the effluent, it appears that immediate compliance with a maximum annual average limit of 430 $\mu\text{mhos/cm}$ is feasible.
- b. **Constituents with No Data or Insufficient Data.** Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.
 - i. **gamma-BHC**
 - (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 concentrations 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 CTR human health criteria for gamma-BHC for water and organisms is 0.019 $\mu\text{g/L}$.

- (b) **RPA Results.** The maximum effluent concentration (MEC) for gamma-BHC was 0.003 µg/L (DNQ), while the maximum observed upstream receiving water concentration was <0.0042 µg/L (non-detect). The MEC occurred in August 2017 and alpha-BHC has not been detected in more recent effluent sampling.

Sample Date	Method Detection Level (µg/L)	Reporting Level (µg/L)	gamma-BHC Result (µg/L)
11/8/2016	0.0021	0.020	ND
2/7/2017	0.002	0.005	ND
4/20/2017	0.002	0.005	0.003 (DNQ)
8/1/2017	0.002	0.005	ND
7/19/2018	0.0021	0.020	ND
9/6/2018	0.0021	0.020	ND
11/1/2018	0.0021	0.020	ND

There is no obvious source for gamma-BHC to be present in the discharge, and Lindane (of which gamma-BHC is a component) has been banned for nearly twenty years.

Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of limitations, additional monitoring has been established for gamma-BHC in the effluent. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- 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, chlorine residual, chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pathogens, pH, and total recoverable zinc. WQBEL's 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. Data collected between December 2015 and September 2018 was used to determine reasonable potential for all above mentioned constituents except copper and zinc. For copper and zinc, data collected between December 2015 and June 2019 was used to determine reasonable potential because some sample results for these constituents exceeded the water quality criteria after September 2018.

i. **Ammonia**

- (a) **WQO.** The 1999 U.S. EPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (the “1999 Criteria”), 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. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC.

The U.S. EPA recently published national recommended water quality criteria for the protection of aquatic life from the toxic effects of ammonia in freshwater (the “2013 Criteria”)¹². The 2013 Criteria is an update to U.S. EPA’s 1999 Criteria and varies based on pH and temperature. Although the 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including new toxicity data on sensitive freshwater mussels in the Family Unionidae, the species tested for development of the 2013 Criteria, may not be present in some Central Valley waterways. The 2013 Criteria document therefore states that, “unionid mussel species are not prevalent in some waters, such as the arid west ...” and provides that, “In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria dataset to better represent the species present at the site.”

The Central Valley Water Board issued a 3 April 2014 California Water Code Section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life (13267 Order) requiring the Discharger to either participate in an individual or group study to determine the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. The Discharger submitted a letter to the Central Valley Water Board indicating their participation in the Central Valley Clean Water Association Freshwater Collaborative Mussel Study. Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to

¹² Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, published August 2013 [EPA 822-R-13-001]

implement the 1999 Criteria to interpret the Basin Plan's narrative toxicity objective. The 1999 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. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. U.S. EPA 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 Sacramento River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Sacramento 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.

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan narrative toxicity objective. 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. 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.

U.S. EPA'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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." U.S. EPA'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 POTW's, U.S. EPA recommends that, "POTW's 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's 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 WQBEL's are required.

- (c) **WQBEL's.** The Central Valley Water Board calculates WQBEL's in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, U.S. EPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the

LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the average weekly effluent limitation (AWEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. The receiving water contains assimilative capacity for ammonia, therefore, acute and chronic aquatic life dilution credits of 5.5:1 and 4.5:1, respectively, were allowed in the development of the WQBELs for ammonia. This Order contains a final average monthly effluent limitation (AMEL) and average weekly (AWEL) for ammonia of 5.4 mg/L and 10.9 mg/L, respectively, based on U.S. EPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum effluent ammonia concentration from December 2015 through September 2018 of 0.5 mg/L (as N) is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limits is feasible.

ii. **Chlorine Residual**

- (a) **WQO.** U.S. EPA 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.
- (b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits 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. Chlorine 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.

U.S. EPA'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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." U.S. EPA'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 POTW's, U.S. EPA recommends that, "POTW's should also be characterized for the possibility of chlorine and ammonia problems." (TSD, p. 50).

The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the Sacramento River, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

- (c) **WQBEL's.** The U.S. EPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on U.S. EPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum effluent chlorine residual concentration of 0.009 mg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limits is feasible.

iii. **Chlorodibromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** The MEC for chlorodibromomethane was 3.34 µg/L based on 32 samples collected from December 2015 through September 2018 (minimum MDL 0.011 µg/L, minimum RL 0.5 µg/L). Chlorodibromomethane was not detected in the upstream receiving water based on three samples collected between from December 2015 through September 2018 (minimum MDL 0.06 µg/L, minimum RL 0.6 µg/L). Therefore, chlorodibromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.
- (c) **WQBELs.** The receiving water contains assimilative capacity for chlorodibromomethane, therefore, a human health dilution credit of 40.9:1 was allowed in the development of the WQBELs for chlorodibromomethane. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for chlorodibromomethane of 14 µg/L and 36 µg/L, respectively, based on the CTR criterion for the protection of human health.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 3.34 µg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. **Copper**

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criterion and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Site specific translators were used for the effluent and receiving water. As described in section IV.C.2.e of this Fact Sheet, the applicable acute and chronic criteria for copper in the effluent are 6.2 µg/L and 5.3 µg/L, respectively, as total recoverable. As dissolved concentrations, the applicable acute and chronic criteria for copper in the receiving water are

5.0 µg/L and 3.7 µg/L, respectively. Order R5-2014-0100 included effluent limitations for copper based on the CTR criteria.

The Basin Plan includes a site-specific, hardness-dependent, maximum concentration water quality objective for the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. Using site specific translators and the selected ambient hardness described in section IV.C.2.e of this Fact Sheet, the applicable Basin Plan maximum concentration objective for copper in the effluent is 6.1 µg/L, as total recoverable, and 5.0 µg/L, as a dissolved concentration.

- (b) **RPA Results.** The maximum effluent concentration for total recoverable copper was 12.5 µg/L based on 45 samples collected between December 2015 and June 2019. The maximum observed upstream receiving water total recoverable copper concentration was 3 µg/L based on 42 samples collected between December 2015 and June 2019.

The maximum effluent concentration for dissolved copper was 4.87 µg/L based on 4 samples collected between December 2015 and June 2019. The maximum observed upstream receiving water dissolved copper concentration was 3.5 µg/L based on 46 samples collected between December 2015 and June 2019.

Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for the protection of freshwater aquatic life and the Basin Plan objective.

- (c) **WQBELs.** The receiving water contains assimilative capacity for copper, therefore, as discussed in section IV.C.2.c, an acute aquatic life dilution credit of 10.7:1 and a chronic aquatic life dilution credit of 25.6:1 were allowed in the development of WQBEL's for copper. Based on the allowable dilution credits, this Order contains an AMEL of 22 µg/L and an MDEL of 32 µg/L based on the CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective.
- (d) **Plant Performance and Attainability.** Based on the analysis of existing effluent data, the Central Valley Water Board concludes that immediate compliance with the effluent limitations for copper is feasible.

v. **Cyanide**

- (a) **WQO.** The CTR includes maximum 1-hour average and 4-day average criteria of 22 µg/L and 5.2 µg/L, respectively, for cyanide for the protection of freshwater aquatic life.

- (b) **RPA Results.** The maximum effluent concentration (MEC) for cyanide was 9 µg/L (total as CN) based on four samples collected from December 2015 through September 2018. Cyanide was not detected in the upstream receiving water based on four samples from December 2015 through September 2018. Therefore, cyanide in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.
- (c) **WQBELs.** The receiving water contains assimilative capacity for cyanide, therefore, an acute aquatic life dilution credit of 5.5:1 and a chronic aquatic life dilution credit of 17:1 was allowed in the development of the WQBELs for cyanide. This Order contains a final average monthly effluent limitation (AMEL) for cyanide of 70 µg/L and a max daily effluent limitation (MDEL) of 140 µg/L based on the CTR criterion for the protection of acute and chronic aquatic life.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 9 µg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. **Dichlorobromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** The MEC for dichlorobromomethane was 16.4 µg/L based on 34 samples collected from December 2015 through September 2018 (minimum MDL 0.10 µg/L, minimum RL 0.5 µg/L). Dichlorobromomethane was not detected in the upstream receiving water in two of three samples collected from December 2015 through September 2018 (minimum MDL 0.08 µg/L, minimum RL 0.5 µg/L). One sample resulted in a DNQ on 10 July 2017 (MDL 0.1 µg/L, RL 0.5 µg/L). Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.
- (c) **WQBELs.** The receiving water contains assimilative capacity for dichlorobromomethane, therefore, a human health dilution credit of 65.2:1 was allowed in the development of the WQBELs for dichlorobromomethane. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for dichlorobromomethane of 31 µg/L and 59 µg/L, respectively, based on the CTR criterion for the protection of human health.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 16.4 µg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **Nitrate and Nitrite**

- (a) **WQO.** The State Water Board, Division of Drinking Water (DDW) has adopted Primary MCL's for the protection of human health for nitrite and nitrate that are equal to 1.0 mg/L and 10 mg/L (measured as nitrogen), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

U.S. EPA has developed a Primary MCL and an MCL goal of 1.0 mg/L for nitrite (measured 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).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed 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).

Federal regulations at 40 C.F.R. section 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.

U.S. EPA'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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." U.S. EPA'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 POTW'S, U.S. EPA recommends that, "POTW's 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. 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's narrative chemical constituents objective. 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 WQBEL's are required.

- (c) **WQBEL's.** The receiving water contains assimilative capacity for nitrate plus nitrite therefore, a dilution credit of 3:1 was allowed in the development of the WQBEL's for nitrate plus nitrite. This Order contains an average monthly effluent limitation (AMEL) and average weekly effluent limitation (AWEL) for nitrate plus nitrite of 40 mg/L and 64 mg/L, respectively, based on the Basin

Plan's narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are 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 Performance and Attainability.** Analysis of the effluent data shows that the MEC of 19.4 µg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

viii. **Pathogens**

- (a) **WQO.** In a letter to the Central Valley Water Board dated 8 April 1999, DDW indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.
- (b) **RPA Results.** Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the Sacramento River. The wastewater receives dilution of more than 20:1 in the receiving water at all times. Therefore, the DDW requirements are applicable to the discharge.
- (c) **WQBEL's.** Pursuant to guidance from DDW, this Order includes effluent limitations for total coliform organisms of 23 MPN/100 mL as a 7-day median; 240 MPN/100 mL, not to be exceeded more than once in a 30-day period. These coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways.

Final WQBELs for BOD₅ and TSS are based on the technical capability of the advanced secondary process, which is necessary to protect the beneficial uses of the receiving water. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The advanced secondary treatment standards for BOD₅ and TSS are indicators of the effectiveness of the advanced secondary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD₅ and TSS loading rates and the corresponding removal rate of the system. The application of advanced secondary treatment processes results in the ability to achieve lower levels for BOD₅ and TSS than the secondary

standards currently prescribed. Therefore, this Order requires AMELs for BOD₅ and TSS of 10 mg/L, which is technically based on the capability of an advanced secondary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD₅ and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows the Facility can meet these WQBELs.

ix. **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.** Between December 2015 and September 2018, the effluent pH ranged from 6.43 to 7.86, the upstream receiving water pH ranged from 6.56 to 7.9, and downstream receiving water pH ranged from 6.63 to 7.84. The data indicate that the effluent did exceed the Basin Plan objectives but did not cause or contribute to any identifiable exceedances of pH in the receiving water.
- (c) **WQBEL's.** Consistent with Order R5-2014-0100, this Order includes an instantaneous minimum effluent limitation of 6.0 and an instantaneous maximum effluent limitation of 8.5.
- (d) **Plant Performance and Attainability.** The effluent pH range was within the instantaneous minimum and instantaneous maximum effluent limitations established in this Order based on 1,037 samples. Therefore, the Central Valley Water Board concludes that the Discharger can consistently comply with these effluent limitations.

x. **Zinc**

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. These criteria for zinc are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. Site specific translators were used for the effluent and receiving water. As described in section IV.C.2.a of this Fact Sheet, the applicable CTR acute and chronic criteria for zinc in the effluent are 67 µg/L and 82 µg/L, respectively, as total recoverable. As dissolved concentrations, the applicable acute and chronic criteria for zinc in the receiving water are both 48 µg/L. Order R5-2014-0100 included effluent limitations for zinc based on the CTR criteria.

The Basin Plan includes a site-specific, hardness-dependent,

maximum concentration water quality objective for the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. Using site specific conversion factors and the selected ambient hardness described in section IV.C.2.e of this Fact Sheet, the applicable Basin Plan maximum concentration objective for zinc in the effluent is 20 µg/L, as total recoverable, and 14 µg/L, as a dissolved concentration.

- (b) **RPA Results.** The maximum effluent concentration for total recoverable zinc was 76.8 µg/L based on 45 samples collected between December 2015 and June 2019. The maximum observed upstream receiving water total recoverable zinc concentration was 27.9 µg/L based on 42 samples collected between December 2015 and June 2019.

The maximum effluent concentration for dissolved zinc was 44 µg/L based on 4 samples collected between December 2015 and June 2019. The maximum observed upstream receiving water dissolved zinc concentration was 7.2 µg/L based on 46 samples collected between December 2015 and June 2019. Therefore, zinc in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of freshwater aquatic life and the Basin Plan objective.

- (c) **WQBELs.** The receiving water contains assimilative capacity for zinc, therefore, as discussed in section IV.C.2.c, an acute aquatic life dilution credit of 10.7:1 was allowed in the development of WQBEL's for zinc. Based on the allowable dilution credits, this Order contains a total recoverable AMEL of 85 µg/L and an MDEL of 126 µg/L based on the CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective.
- (d) **Plant Performance and Attainability.** Based on the analysis of existing effluent data, the Central Valley Water Board concludes that immediate compliance with the effluent limitations for zinc is feasible.

4. WQBEL Calculations

- a. This Order includes WQBEL's for ammonia, BOD₅, pH, TSS, chlorodibromomethane, dichlorobromomethane, total recoverable zinc, total residual chlorine, total recoverable copper, cyanide, electrical conductivity, nitrate plus nitrite, diazinon and chlorpyrifos, total coliform organisms. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.5.b through e, below. See Attachment H for the WQBEL calculations.

- 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:

$$\begin{array}{ll} \text{ECA} = C + D(C - B) & \text{where } C > B, \text{ and} \\ \text{ECA} = C & \text{where } C \leq B \end{array}$$

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.

- c. **Primary and Secondary MCLs.** For non-priority pollutants with primary MCL's to protect human health (e.g., nitrate plus nitrite), the AMEL is set equal to the primary MCL and the AWEL is calculated using the AWEL/AMEL multiplier, where the AWEL multiplier is based on a 98th percentile occurrence probability and the AMEL multiplier is from Table 2 of the SIP.

For non-priority pollutants with secondary MCL's that protect public welfare (e.g., taste, odor, and staining), WQBEL's were calculated by setting the LTA equal to the secondary MCL and using the AMEL multiplier to set the AMEL. The AWEL was calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

- d. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTAacute and LTAchronic) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98th percentile occurrence probability.
- e. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBEL's are calculated using similar procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

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

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

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

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-15. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-day @ 20°C)	Milligrams per liter (mg/L)	10	15	--
Total Suspended Solids	mg/L	10	15	--
Chlorodibromomethane	Micrograms per liter (µg/L)	14	--	36
Copper, Total Recoverable	µg/L	22	--	32
Cyanide	µg/L	70	--	140
Dichlorobromomethane	µg/L	31	--	59
Zinc, Total Recoverable	µg/L	85	--	130
Ammonia Nitrogen, Total (as N)	mg/L	5.4	--	11
Chlorine, Total Residual	mg/L	--	0.011 ¹	0.019 ²
Diazinon and Chlorpyrifos	µg/L	³	--	⁴
Nitrate Plus Nitrite	mg/L	40	64	--
Total Coliform Organisms	Most Probable Number (MPN)/100mL	--	23 ⁵	240 ⁶

¹ Applied as a 4-day average effluent limitation.

² Applied as a 1-hour average effluent limitation.

³ Average Monthly Effluent Limitation

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

Where:

$C_{D_{avg}}$ = average monthly diazinon effluent concentration in $\mu\text{g/L}$

$C_{C_{avg}}$ = average monthly chlorpyrifos effluent concentration in $\mu\text{g/L}$

4 Maximum Daily Effluent Limitation

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

Where:

$C_{D_{max}}$ = maximum daily diazinon effluent concentration in $\mu\text{g/L}$

$C_{C_{max}}$ = maximum daily chlorpyrifos effluent concentration in $\mu\text{g/L}$

5 Applied as a 7-day median effluent limitation.

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

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 and chronic 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 Section 3.1.20.) 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. 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. U.S. EPA'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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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.

U.S. EPA 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." Accordingly, 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 Section 3.1.20.) The table below is chronic WET testing performed by the Discharger from August 2015 through August 2018. This data was used to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

Table F-16. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow Pimephales promelas Survival (TUc)	Fathead Minnow Pimephales Growth (TUc)	Water Flea Ceriodaphnia dubia Survival (TUc)	Water Flea Ceriodaphnia dubia Reproduction (TUc)	Green Algae Selanstrum capricornutum Growth (TUc)
8/27/2015	1	1	1	1	1
8/9/2016	1	1	1	1	1
8/15/2017	1	1	1	1	1
11/21/201	1	1	1	1	1
8/28/2018	1	1	1	1	1

- i. **RPA.** Chronic toxicity testing results exceeding 9 chronic toxicity units (TUC) (as 100/NOEC) and a percent effect at 11.1 percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Based on chronic toxicity testing conducted between August 2015 and August 2019 the maximum chronic toxicity result was 1 TUC, therefore, the discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan's narrative toxicity objective.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 C.F.R section 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. section 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 C.F.R. section 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 MCL's) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section III.F of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45 (d) requires average weekly and average monthly discharge limitations for POTW's unless impracticable. For ammonia, chlorodibromomethane, dichlorobromomethane, and zinc, average weekly effluent limitations have been replaced with maximum daily effluent limitations in accordance with Section 1.4 of the SIP. Furthermore, for BOD₅, chlorine residual, pH, total coliform organisms, 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. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

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 biochemical oxygen demand (BOD₅), chlorodibromomethane (CDBM), dichlorobromomethane (DCBM), and total suspended solids (TSS). The effluent

limitations for BOD₅, CDBM, DCBM, and TSS are less stringent than those in Order R5-2014-0100. 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) prohibits the establishment of less stringent water quality-based effluent limits “except in compliance with Section 303(d)(4).” CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.
 - i. For waters where standards are not attained, CWA section 303(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL’s or WLAs will assure the attainment of such water quality standards.
 - ii. 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 Sacramento River is considered an attainment water for BOD₅, CDBM, DCBM, and TSS because the receiving water is not listed as impaired on the 303(d) list for these constituents.¹³ As discussed in section IV.D.4, below, relaxation of the effluent limits complies with federal and state antidegradation requirements. Thus, relaxation of the effluent limitations for BOD₅, CDBM, DCBM, and TSS from Order R5-2014-0100 meets the exception in CWA section 303(d)(4)(B).

- 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.

Updated information that was not available at the time Order R5-2014-0100 was issued indicates that less stringent effluent limitations for CDBM and DCBM based on available dilution credits satisfy requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

- i. **Chlorodibromomethane.** Based on dilution/mixing zone studies conducted and receiving water monitoring data collected, a mixing zone and dilution credit of 40.9:1 is applicable and the receiving water contains assimilative capacity for chlorodibromomethane, as discussed

13 “The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list.” State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

in section IV.C.2.c of this Fact Sheet. Therefore, this Order includes less stringent effluent limitations for chlorodibromomethane based on the performance of the Facility and the available dilution.

ii. **Dichlorobromomethane.** Based on dilution/mixing zone studies conducted and receiving water monitoring data collected, a mixing zone and dilution credit of 65.2:1 is applicable and the receiving water contains assimilative capacity for dichlorobromomethane, as discussed in section IV.C.2.c of this Fact Sheet. Therefore, this Order includes less stringent effluent limitations for dichlorobromomethane based on the performance of the Facility and the available dilution.

c. **Flow.** Order R5-2014-0100 included flow as an effluent limitation based on the Facility design flow. Compliance with the effluent limits for flow in Order R5-2014-0100 was calculated annually based on the average daily flow collected over three consecutive dry weather months. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order. Flow as a discharge prohibition adequately regulates the Facility, does not allow for an increase in the discharge of pollutants, and does not constitute backsliding.

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 as there should be no change to the existing water quality. The Order requires compliance with applicable federal technology-based standards and with WQBEL's 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 C.F.R. section 131.12 and the State Anti-Degradation Policy. 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 relaxes effluent limitations for chlorodibromomethane and dichlorobromomethane based on the performance of the Facility and available dilution. The relaxation of WQBEL's for these parameters will not result in an increase in pollutants concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. Therefore, the Central Valley Water Board finds that the relaxation of these effluent limitations does not result in an 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 C.F.R. section 131.12 and State Water Board Resolution No.68-16.

This Order also removes MDEL's and mass-based effluent limitations for BOD₅ and TSS based on 40 C.F.R part 122.45(d) and (f), and as described further in

section IV.C.3 of this Fact Sheet. The removal of MDEL's and mass-based effluent limits for BOD₅ and TSS will not result in a decrease in the level of treatment or control, or a reduction in water quality. Furthermore, both concentration-based AMEL's and AWEL's remain for BOD₅ and TSS, as well as a discharge flow prohibition that limits the amount of flow that can be discharged to the receiving water. The combination of concentration-based effluent limits and a flow prohibition in this Order are equivalent to mass-based effluent limitations, which were redundant limits contained in previous Orders by multiplying the concentration-based effluent limits and permitted average dry weather flow by a conversion factor to determine the mass-based effluent limitations. Therefore, the Central Valley Water Board finds that the removal of MDEL's and mass-based effluent limits for BOD₅ and TSS does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the relaxation of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Antidegradation Policy.

For salinity, limited degradation is occurring in a high-quality water as the discharge is greater than the background concentration of salinity. Under current requirements, the Discharger is implementing best practicable treatment or control (BPTC). To ensure that the Discharger continues to implement BPTC, a performance-based effluent limitation of 430 µmhos/cm for EC is applied as an annual average to limit the discharge to current levels. This performance-based effluent limitation represents the maximum annual average effluent EC concentration plus ten percent for a calendar year using data from 2016 through 2018. Ten percent is added to the maximum annual average to ensure that the EC of the Facility's discharge does not increase over time.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBEL's for individual pollutants. The technology-based effluent limitations consist of restrictions on pH, and percent removal requirements for BOD₅ and TSS. Restrictions on these constituents are discussed in section IV.B.2 of this 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. For BOD, TSS, and pH both technology-based effluent limitations and water quality-based effluent limitations are applicable. The more stringent of these effluent limitations are implemented by this Order. These limitations are not more stringent than required by the CWA.

WQBEL's 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 WQBEL's were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual water quality-based effluent

limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

**Summary of Final Effluent Limitations
Discharge Point 001**

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Basis ¹
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	Milligrams per liter (mg/L)	10	15	--	--	--	AS
BOD	% Removal	85	--	--	--	--	CFR
pH	Standard Units	--	--	--	6.0	8.5	BP
Total Suspended Solids (TSS)	mg/L	10	15	--	--	--	AS
TSS	% Removal	85	--	--	--	--	CFR
Chlorodibromomethane	Micrograms per liter (µg/L)	14	--	36	--	--	CTR
Copper, Total Recoverable	µg/L	22	--	32	--	--	CTR
Cyanide	µg/L	70	--	140	--	--	CTR
Dichlorobromomethane	µg/L	31	--	59	--	--	CTR
Zinc, Total Recoverable	µg/L	85	--	130	--	--	BP
Ammonia Nitrogen, Total (as N)	mg/L	5.4	10.9	--	--	--	NAWQC
Ammonia Nitrogen, Total (as N)	(Pounds per day (lbs/day)	90	182	--	--	--	NAWQC
Chlorine, Total Residual	mg/L	--	0.011 ²	0.019 ³	--	--	NAWQC
Diazinon and Chlorpyrifos	µg/L	4	--	5	--	--	TMDL

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Basis ¹
Electrical Conductivity @ 25°C	Micromhos per centimeter (µmhos/cm)	430 ⁸	--	--	--	--	PB
Nitrate Plus Nitrite (as N)	mg/L	40	64	--	--	--	MCL
Total Coliform Organisms	Most Probable Number (MPN)/100mL	--	23 ⁶	240 ⁷	--	--	Title 22
Acute Toxicity	% Survival	--	--	70 ⁸ /90 ⁹	--	--	BP

¹ AS – Based on advanced secondary treatment capability. These effluent limitations reflect the capability of a properly operated advanced secondary 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.

CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.

NAWQC – Based on U.S. EPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.

TMDL – Based on the TMDL for salinity and boron in the lower San Joaquin River.

PB – Based on Facility performance.

MCL – Based on the Primary Maximum Contaminant Level.

Title 22 – Based on State Water Board Division of Drinking Water Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

² Applied as a 4-day average effluent limitation.

³ Applied as a 1-hour average effluent limitation.

⁴ Average Monthly Effluent Limitation

$$S_{avg} = C_{Davg}/0.079 + C_{Cavg}/0.012 \leq 1.0$$

Where:

CD_{avg} = average monthly diazinon effluent concentration in $\mu\text{g/L}$

CC_{avg} = average monthly chlorpyrifos effluent concentration in $\mu\text{g/L}$

5 Maximum Daily Effluent Limitation

$$S_{max} = CD_{max}/0.16 + CC_{max}/0.025 \leq 1.0$$

Where:

CD_{avg} = maximum daily diazinon effluent concentration in $\mu\text{g/L}$

CC_{avg} = maximum daily chlorpyrifos effluent concentration in $\mu\text{g/L}$

6 Applied as a 7-day median effluent limitation.

7 Not to be exceeded more than once in any 30-day period.

8 Expressed as an annual average.

E. Interim Effluent Limitations-Not Applicable

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 ammonia, 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.

B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. 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 C.F.R. 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 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. 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.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **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 approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.
- 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 site-specific Toxicity Reduction Evaluation (TRE) or, under certain circumstances, may be allowed to participate in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE. This Order may be reopened to include a new chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE and/or TES
- 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, except for copper and zinc, when developing effluent limitations.

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.

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 Section 3.1.20.) Based on whole effluent chronic toxicity testing performed by the Discharger from August 2015 through August 2018, 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 to demonstrate compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger this provision requires the Discharger either participate in an approved Toxicity Evaluation Study (TES) or conduct a site-specific Toxicity Reduction Evaluation (TRE).

A TES may be conducted in lieu of a TRE if the percent effect at 11.1 percent effluent is less than or equal to 50 percent. Determining the cause of toxicity can be challenging when the toxicity signal is low. Several Central Valley facilities with similar treatment systems have been experiencing intermittent low-level toxicity. The dischargers have not been successful identifying the cause of the toxicity because of the low toxicity signal and the intermittent nature of the toxicity. Due to these challenges, the Central Valley Clean Water Association (CVCWA), in collaboration with staff from the Central Valley Water Board, has initiated a Special Study to Investigate Low Level Toxicity Indications (Group Toxicity Study). This Order allows the Discharger to participate in an approved TES, which may be conducted individually or as part of a coordinated group effort with other similar dischargers that are exhibiting toxicity. Although the current CVCWA Group Toxicity Study is related to low-level toxicity, participation in an approved TES is not limited to only low-level toxicity issues.

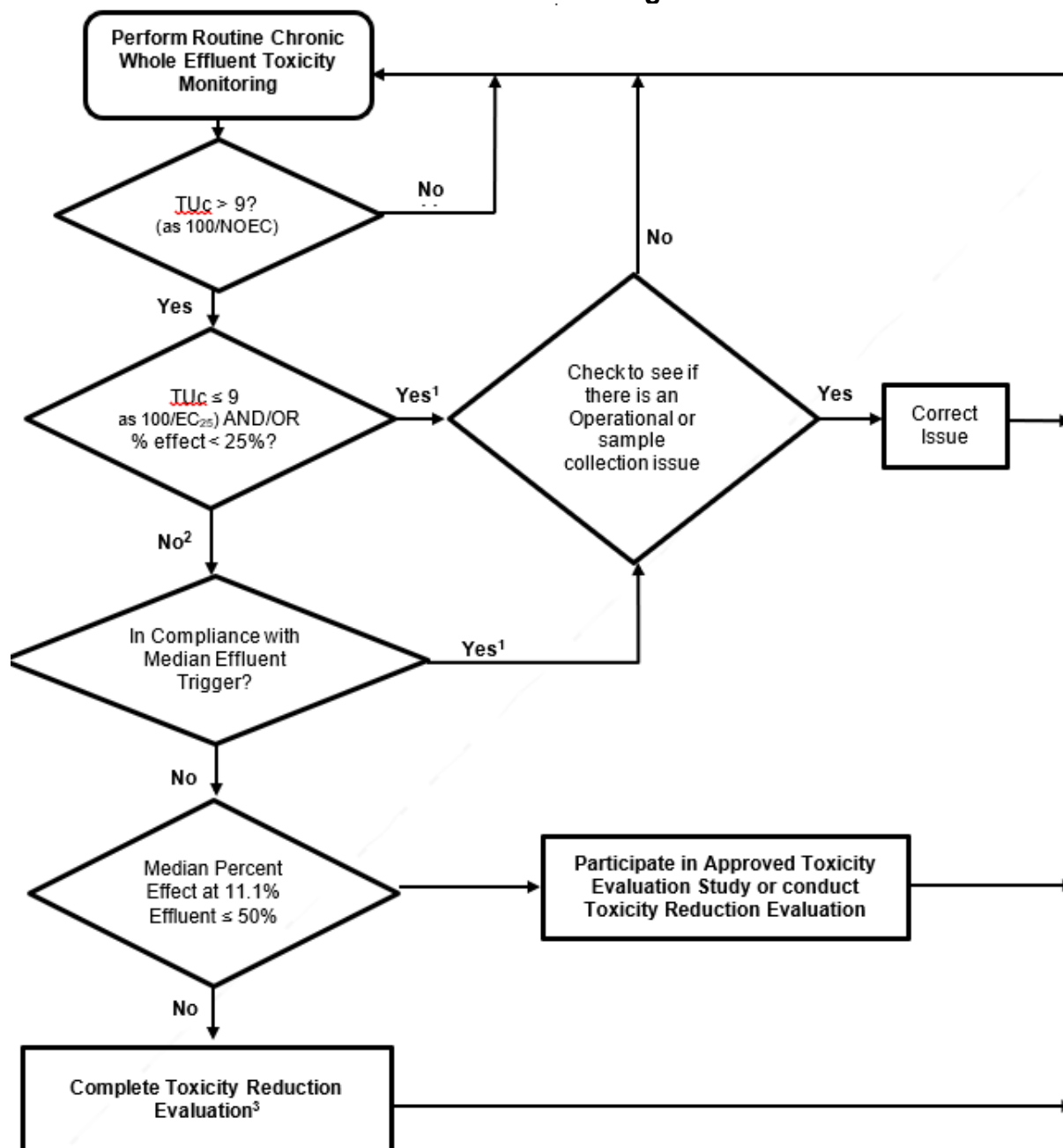
See the WET Monitoring Flow Chart (Figure F-2), below, for further clarification of the decision points for determining the need for TES/TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Work Plan in accordance with U.S. EPA guidance. Numerous guidance documents are available, as identified below:

- i. Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.

- ii. Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- iii. Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- iv. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- v. 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.
- vi. 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.
- vii. 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.
- viii. 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.
- ix. Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

**Figure F-2.
WET Accelerated Monitoring Flow Chart**



- ¹ The Discharger may participate in an approved TES if the discharge has exceeded the chronic toxicity monitoring trigger twice or more in the past 12-month period and the cause is not identified and/or addressed.
- ² The Discharger may elect to take additional samples to determine the 3-sample median. The samples shall be collected at least one week apart, and the final sample shall be within 6 weeks of the initial sample exhibiting toxicity.
- ³ The Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a TRE within the past 12 months and has been unsuccessful in identifying the toxicant.

3. **Best Management Practices and Pollution Prevention**

- a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required to be maintained in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River. Submission of a salinity progress report with the next ROWD evaluating effluent and receiving water EC monitoring and results is also required.

4. **Construction, Operation, and Maintenance Specifications**

- a. The operation and maintenance specifications for the emergency storage and sludge drying ponds are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order No. R5-2014-0100. In addition, reporting requirements related to use of the emergency storage and sludge drying ponds are required to monitor their use and the potential impact on groundwater.

5. **Special Provisions for Publicly-Owned Treatment Works (POTWs)**

- a. **Pretreatment Requirements.** 40 CFR 403.8(a) requires POTWs with a total design flow greater than 5 MGD and receiving from Industrial Users pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards establish a POTW pretreatment program. The Executive Officer may require that a POTW with a design flow of 5 MGD or less develop a POTW pretreatment program if the nature or volume of the industrial influent, treatment process upsets, violations of POTW effluent limitations, contamination of municipal sludge, or other circumstances warrant in order to prevent interference with the POTW or pass through.

The average dry weather design flow for the Facility is less than 5 MGD and the Facility does not receive discharges from Categorical Industrial Users (CIUs) or Significant Industrial Users (SIUs). Under these conditions, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations set forth in 40 CFR 403.

- b. **Collection System.** 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 State Water Board amended the Monitoring and Reporting Program for the General Order through Order WQ 2013-0058-EXEC on 6 August 2013. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one 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.

The General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows that are more extensive, and therefore, more stringent than the requirements

under federal standard provisions. The Discharger and public agencies that are discharging wastewater into the facility's collection system were required to obtain enrollment for regulation under the General Order by 1 December 2006.

- c. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this Order means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 C.F.R. part 503. This Order does not regulate offsite use or disposal of biosolids, which are regulated instead under 40 C.F.R. part 503; administered by U.S. EPA. The Sludge/Biosolids Treatment or Discharge Specifications in this Order implement the California Water Code to ensure sludge/biosolids are properly handled onsite to prevent nuisance, protect public health, and protect groundwater quality.
- d. **Other Special Provisions**
 - i. The Discharger does not maintain coverage under the State Water Board General Industrial Storm Water Permit. All storm water is directed to the 3 million-gallon emergency storm water basin, where it may be routed to the headworks, or left to percolate or evaporate. Any change in storm water discharge location is subject to the requirements of the State Water Board General Industrial Storm Water Permit.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order establishes monitoring, reporting, and recordkeeping 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., BOD₅ and TSS reduction requirements). The monitoring frequencies for BOD₅ (twice per month) and TSS (twice per month) as well as pH (twice per week) have been retained from Order No. R5-2014-0100. The monitoring frequency for flow (continuous) at SEC-001 is also retained from Order No. R5-2014-0100.
2. Order R5-2014-0100 required annual monitoring of Total Recoverable Metals at Monitoring Location INF-001. This Order removes annual monitoring for Total

Recoverable Metals as it was a legacy monitoring requirement and is no longer necessary.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 C.F.R. section 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 (daily), chlorodibromomethane (monthly), dichlorobromomethane (monthly), total recoverable zinc (monthly), ammonia (twice per month), chlorine residual (continuous), chlorpyrifos (annually), diazinon (annually), electrical conductivity (monthly), hardness (monthly), nitrate (monthly), nitrite (monthly), nitrite plus nitrate (monthly), temperature (weekly), total coliform organisms (twice per week), acute toxicity (quarterly), and chronic toxicity (annually) have been retained from Order R5-2014-0100.
3. Monitoring requirements for bis (2-ethylhexyl) phthalate, total recoverable cadmium, orthophosphate, total phosphorous, standard minerals, and total dissolved solids are legacy monitoring requirements and thus have not been retained from Order R5 2014-0100.
4. Monitoring requirements for BOD₅ and TSS have been changed such that the lbs/day monitoring requirement has not been retained from Order R5-2014-0100. However, the mg/L monitoring requirements and percent removal requirements have been retained from Order R5-2014-0100.
5. 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 DDW accredits 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 CWA. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with CWA requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, cyanide, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2014-0100, quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Consistent with Order R5-2014-0100, annual 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. Monitoring Location RSW-001
 - i. Monitoring frequencies and sample types for pH (weekly), total recoverable zinc (monthly), dissolved zinc (monthly), dissolved oxygen (weekly), electrical conductivity (monthly), hardness (monthly), standard minerals (annually), temperature (weekly), and total dissolved solids (quarterly), have been retained from Order R5-2014-0100.
 - ii. Monitoring frequencies for ammonia have increased from annually to monthly. The increase in monitoring is necessary to better characterize the receiving water and aid in development of site-specific ammonia criteria and to determine compliance with permit requirements.
 - iii. Monitoring for dissolved organic carbon (monthly) has been added in this Order.
 - iv. 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. This Order requires monitoring for priority pollutants and other pollutants of concern at Monitoring Location RSW-001 quarterly during the second year of the permit term, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See Attachment E, Section IX.C for more detailed requirements related to performing priority pollutant monitoring.
- c. Monitoring Location RSW-002
 - i. Downstream receiving water monitoring and sample types for pH, dissolved oxygen, electrical conductivity, temperature, and total dissolved solids have been retained from Order R5-2014-0100.

2. Groundwater- Not Applicable

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the pretreatment requirements contained in 40 C.F.R. part 403 and implemented in section VI.C.5.a. of this Order. Biosolids monitoring is required per U.S. EPA guidance to evaluate the effectiveness of the pretreatment program. Biosolids monitoring for compliance with 40 C.F.R. part 503 regulations is not included in this Order since it is a program administered by [U.S. EPA's part 503 biosolids program](https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws): (<https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws>)

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater. This Order retains quarterly water supply monitoring for electrical conductivity, total dissolved solids, total recoverable copper, and total recoverable zinc. This Order also retains annual water supply monitoring for standard minerals.

3. Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program

Under the authority of section 308 of the CWA (33 U.S.C. § 1318), U.S. EPA requires all dischargers under the NPDES Program to participate in the annual DMR-QA Study Program. The DMR-QA Study evaluates the analytical ability of laboratories that routinely perform or support self-monitoring analyses required by NPDES permits. There are two options to satisfy the requirements of the DMR-QA Study Program: (1) The Discharger can obtain and analyze a DMR-QA sample as part of the DMR-QA Study; or (2) Per the waiver issued by U.S.EPA to the State Water Board, the Discharger can submit the results of the most recent Water Pollution Performance Evaluation Study from their own laboratories or their contract laboratories. A Water Pollution Performance Evaluation Study is similar to the DMR-QA Study. Thus, it also evaluates a laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES Program. The Discharger shall submit annually the results of the DMR-QA Study or the results of the most recent Water Pollution Performance Evaluation Study to the State Water Board. The State Water Board's Quality Assurance Program Officer will send the DMR-QA Study results or the results of the most recent Water Pollution Performance Evaluation Study to U.S. EPA's DMR-QA Coordinator and Quality Assurance Manager.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the City of Anderson Water Pollution Control Plant. 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 Persons

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 internet posting.

The public had access to the agenda and any changes in dates and locations through the [Central Valley Water Board's website](http://www.waterboards.ca.gov/centralvalley/board_info/meetings/) at:
(http://www.waterboards.ca.gov/centralvalley/board_info/meetings/)

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 19 September 2019.**

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: 11 October 2019
Time: 8:30 a.m.
Location: Redding City Hall
777 Cypress Avenue
Redding, CA 96001

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 person aggrieved by this action of the Central Valley Water Board may petition the State Water board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., within 30 calendar days of the date of adoption of this Order at the following address, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

Or by email at waterqualitypetitions@waterboards.ca.gov

For instructions on [how to file a petition for review](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml), 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 Kate Sjoberg at (530) 224-3218.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

General Note: All inorganic concentrations are given as a total recoverable.

Abbreviations used in this table:

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)
BP =	Basin Plan - Numeric Site-Specific Basin Plan Water Quality Objective
MCL =	Drinking Water Standards Maximum Contaminant Level
NA =	Not Available
RP =	Reasonable Potential

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	BP	MCL	RP
Ammonia Nitrogen, Total (as N)	µg/L	1.25	0.05	2.14	2.14 ^{1,5,6}	3.66 ²	NA	NA	NA	NA	Yes ⁸
Chloride	mg/L	46.2	1.92	230	860 ¹	230 ³	NA	NA	NA	250 ⁵	No ¹⁶
Chlorodibromomethane	µg/L	3.34	<0.11	0.41	NA	NA	0.41	34	NA	80 ¹³	Yes (MEC>C)
Copper, Total Recoverable	µg/L	12.5	11.5	5.29	12	9.5	1,300	NA	11.4	1,000 ⁴	Yes (MEC>C)
Cyanide	µg/L	9	<1	5.2	22	5.2	700	220,000	10	150 ¹⁰	Yes (MEC>C)

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	BP	MCL	RP
Dichlorobromomethane	µg/L	16.4	<0.12	0.56	NA	NA	0.56	46	NA	80 ¹³	Yes (MEC>C)
Electrical Conductivity	µmho s/cm	468	133	700	NA	NA	NA	NA	NA	900 ⁴	No ¹⁶
gamma-BHC	µg/L	0.005	<0.004	0.019	0.95	NA	0.019	0.063	NA	0.2 ⁹	No ⁸
Nitrate Nitrogen, Total (as N)	mg/L	19.4	0.16	10	NA	NA	10	NA	NA	10 ⁹	Yes (MEC>C)
Nitrite Nitrogen, Total (as N)	mg/L	0.003	<0.02	1	NA	NA	NA	NA	NA	1 ⁹	No
Sulfate, Total (as SO4)	mg/L	62	4.3	250	NA	NA	NA	NA	NA	250 ⁴	Yes ¹⁶
Sulfide, Total (as S)	mg/L	n/a	NA	NA	NA	NA	NA	NA	NA	--	No ¹⁶
Total Dissolved Solids	mg/L	409	100	500	NA	NA	NA	NA	NA	500 ⁴	No ¹⁶
Zinc, Total Recoverable	µg/L	64.3	27.9	20	NA	160	74,000	26,000	37.9	5,000 ⁴	Yes (MEC>C)

¹ U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.

² Chronic 30-day ammonium criteria.

³ U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day average.

⁴ Secondary MCL.

⁵ NAWQC 2013 Update – salmonids present, mussels absent.

⁶ Determined using maximum permitted pH of 8.5 s.u. and maximum observed effluent temperature of 78.4°F.

⁷ U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.

- 8 See section IV.C.3 of the Fact Sheet (Attachment F) for a discussion of the RPA results.
- 9 Primary MCL.
- 10 Criterion to be compared to the maximum upstream receiving water concentration, based on minimum receiving water hardness of 35 mg/L as CaCO₃.
- 11 Criterion to be compared to the MEC, based on minimum effluent hardness of 76 mg/L as CaCO₃.
- 12 Site-specific chronic translator for copper applied: 0.69.
- 13 Site-specific acute translator for copper applied: 0.81.
- 14 Site-specific acute translator for zinc applied: 0.72.
- 15 Site-specific chronic translator for zinc applied: 0.59.
- 16 Performance-based effluent limit required to ensure continued implementation of BPTC per State Anti-Degradation Policy.

ATTACHMENT H – CALCULATION OF WQBEL’S
HUMAN HEALTH WQBEL’S CALCULATIONS

Abbreviations used in this table:

CV = Coefficient of Variation
EFF = Effluent
MDEL = Maximum Daily Effluent Limitation
AMEL = Average Monthly Effluent Limitation
MDEL = Maximum Daily Effluent Limitation
AWEL = Average Weekly Effluent Limitation

Parameter	Units	Criteria	Mean Background Concentration ¹	CV Eff ²	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Chlorodibromomethane	µg/L	0.41	0.0767	1.05	40.9	2.57	1.99	14	36.1	--
Dichlorobromomethane	µg/L	0.56	0.1	0.54	65.2	1.90	1.49	31	59	--
Nitrate Nitrogen, Total (as N)	mg/L	10	0.421	0.48	3.1	1.82	1.44	40	--	64

¹ Maximum background concentration.
² Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.

ATTACHMENT H – CALCULATION OF WQBEL’S
AQUATIC LIFE WQBEL’S CALCULATIONS

Abbreviations used in this table:

- B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
- CMC = Criterion Maximum Concentration (CTR or NTR)
- CCC = Criterion Continuous Concentration (CTR or NTR)
- CV = Coefficient of Variation (established in accordance with section 1.4 of the SIP)
- DF= Dilution Factor
- ECA Effluent Concentration Allowance
- Eff = Effluent
- LTA Aquatic Life Calculations – Long-Term Average
- Mult = Multiplier
- AMEL = Average Monthly Effluent Limitation
- AWEL= Average Weekly Effluent Limitation
- MDEL = Maximum Daily Effluent Limitation

Parameter	Units	CMC	CCC	B	Eff CV ⁴	CMC DF	CCC DF	ECA Multacute	LTAacute	ECA Multchronic	LTA chronic	AMEL Mult ₉₅	AWEL Mult	MDEL Mult ₉₉	AMEL ¹	AWEL ²	MDEL ³
Ammonia Nitrogen, Total (as N)	mg/L	2.14	0.8 ⁵	0.05	1.00	10.7	4.6	0.20	2.78	0.67	2.78	1.95	3.91	4.90	5.4	10.9	--
Zinc, Total Recoverable	µg/L	14 ⁶	49 ⁶	7.2 ⁶	0.26	10.7	--	0.54	68	0.72	85	1.25	--	1.85	85	--	126
Copper, Total Recoverable	µg/L	5.0 ⁶	3.7 ⁶	3.0 ⁶	0.27	10.7	25.6	0.56	18.0	0.74	21.75	1.24	--	1.79	22	--	32

- 1 Average Monthly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 95th percentile occurrence probability.
- 2 Average Weekly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 98th percentile occurrence probability.
- 3 Maximum Daily Effluent Limitations are calculated according to Section 1.4 of the SIP using a 99th percentile occurrence probability.
- 4 Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.
- 5 30-day ammonia criteria.
- 6 Dissolved concentration

(End of document)