CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2018-0042
NPDES NO. CA0082589

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF REDDING STILLWATER WASTEWATER TREATMENT FACILITY 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 Redding
Name of Facility	Stillwater Wastewater Treatment Facility
Facility Address	6475 Airport Road
	Anderson, CA 96007
	Shasta County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Advanced Secondary Treated Effluent	40° 28' 23.48"	122° 16' 10.5"	Sacramento River

Table 3. Administrative Information

This Order was adopted on:	**31 May 2018**
This Order shall become effective on:	**1 July 2018**
This Order shall expire on:	**30 June 2023**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**1-year prior to the Order expiration date**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	Major

I, 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 31 May 2018.

Original Signed By

PATRICK PULUPA, Executive Officer

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TABLES

ATTACHMENTS

I. FACILITY INFORMATION

Information describing the City of Redding, Stillwater Wastewater Treatment Facility (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 (MRP) establishes monitoring and reporting requirements to implement federal and state requirements. The MRP 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 R5-2013-0043 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater 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 bypass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

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

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

E. Discharge of waste classified as "hazardous," as defined in the California Code of Regulations (CCR), Title 22, section 66261.1 et seq., is prohibited.

F. Average Dry Weather Flow. Discharges exceeding an average dry weather flow of 3.4 million gallons per day (MGD) are prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

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

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--	--	--
pH	standard units	--	--	--	6.0	8.5
Total Suspended Solids	mg/L	10	15	--	--	--
Priority Pollutants						
Chlorodibromomethane	µg/L	9.2	--	24	--	--
Copper, Total Recoverable	µg/L	33	--	52	--	--
Cyanide, Total (as CN)	µg/L	14	--	28	--	--
Dichlorobromomethane	µg/L	43	--	89	--	--
Zinc, Total Recoverable	µg/L	180	--	300	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.62	1.4	--	--	--
	lbs/day[1]	18	40	--	--	--
Nitrate Plus Nitrite (as N)	mg/L	45	68	--	--	--

[1] Based on a design average daily discharge flow of 3.4 million gallons per day (MGD).

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

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

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

d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

i. 0.011 mg/L, as a 4-day average; and
ii. 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 immediately after disinfection:

i. 23 most probable number (MPN) per 100 mL, as a 7-day median;
ii. 240 MPN/100 mL, more than once in any 30-day period; and
iii. 500 MPN/100 mL, as a daily maximum.

f. **Diazinon and Chlorpyrifos**

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

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

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

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

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

$C_{D\,W\text{-}AVG}$ = average weekly diazinon effluent concentration in µg/L.
$C_{C\,W\text{-}AVG}$ = average weekly chlorpyrifos effluent concentration in µg/L.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Emergency Storage Ponds

1. The discharge of waste classified as "hazardous" as defined in section 2521(a) of CCR, Title 23, or "designated," as defined in section 13173 of the Water Code, to treatment ponds is prohibited.
2. Objectionable odors originating at the Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).
3. As a means of discerning compliance with section IV.B.2, above, the dissolved oxygen content in the upper zone (1 foot) or wastewater in ponds shall not be less than 1.0 mg/L.
4. The emergency overflow ponds shall be managed to prevent the breeding of mosquitoes. In particular:
   a. Weeds shall be minimized; and
   b. Dead algae, vegetation, and debris shall not accumulate on the water surface.
5. Public contact with the wastewater shall be precluded through such means as fences, signs, or other acceptable alternatives.

C. Recycling Specifications

1. The delivery or use of reclaimed water shall be in conformance with the criteria contained in CCR, Title 22, division 4, chapter 3, or amendments thereto.
2. The total coliform organisms shall not exceed 23 MPN/100 mL, as a 7-day median.
3. The discharge shall be distributed uniformly on adequate acreage in compliance with Water Reclamation Requirements Order 98-016, or its update. All tail water must be returned to the spray fields of treatment facilities.

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 95th 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.

   d. From 1 June to 31 August: Concentrations of dissolved oxygen to fall below 9.0 mg/L. When natural conditions lower dissolved oxygen below this level, the concentration shall be maintained at or above the 95 percent saturation.

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 68-16 and 40 C.F.R. section 131.12);

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

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

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

   h. Diazinon concentrations in excess of 0.16 µg/L (1-hour average) or 0.10 µg/L (4-day average) to occur more than once in a 3-year period; nor

   i. Chlorpyrifos concentrations in excess of 0.025 µg/L (1-hour average) or 0.015 µg/L (4-day average) to occur more than once in a 3-year period.

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 CCR.

11. **Salinity.** Electrical conductivity (at 25°C) shall not exceed 230 µmhos/cm (50^{th} percentile) or 235 µmhos/cm (90^{th} percentile) at Knights Landing above Colusa Basin Drain or 240 µmhos/cm (50^{th} percentile) or 340 µmhos/cm (90^{th} percentile) at I Street Bridge, 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 more stringent of the following applies:
    a. The natural receiving water temperature shall not be increased by more than 5°F at any time.
    b. The receiving water temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City during periods when temperature increases will be detrimental to the fishery.
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 NTU;
    c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTU;
    d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTU; nor
    e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTU.

B. Groundwater Limitations

1. Release of waste constituents from any portion of the Facility shall not cause groundwater to:
    a. Contain constituents in concentrations that exceed either the Primary or Secondary MCL's established in CCR, Title 22, or natural background water quality, whichever is greater;
    b. Contain total coliform organisms over any 7-day period equaling or exceeding 2.2 MPN/100 mL; or

c. 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 CCR, Title 23, 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 C.F.R. 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 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 bypass, 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 (POTW) 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 (530) 224-4845 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall 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 C.F.R. 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, WET, 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 an effluent 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 need for a mercury offset program for the Discharger.

d. **Whole Effluent Toxicity (WET).** As a result of a Toxicity Reduction Evaluation (TRE) or Toxicity Evaluation Study (TES), this Order may be reopened to include a new chronic toxicity effluent limitation, a revised acute toxicity 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. If the Discharger performs studies to determine site-specific WER's 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 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. **Effluent Limits Based on Facility Performance.** This Order may be reopened to revise interim and/or final effluent limitations where Facility performance was considered in development of the limitations (e.g., performance-based effluent limitations for copper, cyanide, zinc, nitrate plus nitrite, and disinfection byproducts) should the Discharger provide information demonstrating the increase in discharge concentrations have been caused by water conservation efforts, drought conditions, and/or the change in disinfection chemicals.

h. **Diazinon and Chlorpyrifos Basin Plan Amendment.** The Central Valley Water Board is developing a Basin Plan Amendment to provide an implementation plan for NPDES-permitted domestic wastewater dischargers. This Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

i. **Chronic Toxicity Trigger.** This Order may be reopened to revise the chronic toxicity monitoring trigger specified in section VI.C.2.a.i if the Discharger provides new information demonstrating a higher trigger will ensure compliance with the Basin Plan's narrative toxicity objective. The new information, at a minimum, must include three species chronic WET testing on the receiving water and effluent. This chronic toxicity testing shall be performed using the dilution series shown in Table E-4 to evaluate synergistic and/or additive toxicity effects in the effluent and receiving water mixture. The information may be obtained through an individual or group study.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Toxicity Reduction Evaluation (TRE) 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 Special Provision, the Discharger is required to initiate a TRE in accordance with an approved TRE Work Plan and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TRE's are designed to identify the causative agents and sources of WET, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. Alternatively, under certain conditions, as described below, the Discharger may participate in an approved TES in lieu of conducting a site-specific TRE.

i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger is 2 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to initiate additional actions to evaluate effluent toxicity as specified in subsection ii, below.

ii. **Chronic Toxicity Monitoring Trigger Exceeded.** When a chronic WET result during routine monitoring exceeds the chronic toxicity monitoring trigger, the Discharger shall proceed as follows:

(a) **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 2 TUc (as $100/EC_{25}$) and the percent effect is greater than 25 percent at 50 percent effluent, proceed with subsection (b). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring.

(b) **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.

(c) **Toxicity Evaluation Study (TES).** If the percent effect is ≤ 50 percent at 50 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.

(d) **Toxicity Reduction Evaluation (TRE).** If the percent effect is > 50 percent at 50 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 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 of these actions.

3. Best Management Practices and Pollution Prevention

a. **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, due 1 year prior to the permit expiration date.

4. Construction, Operation and Maintenance Specifications

a. **Storage Pond Operating Requirements**

i. The treatment facilities 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; and

(d) Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).

iv. 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).

v. 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 Land Discharge Specifications at section IV.B, above.

vi. The discharge of waste classified as "hazardous" as defined CCR, Title 23, section 2521(a), or "designated" as defined in section 13173 of the Water Code, to the treatment ponds is prohibited.

vii. Objectionable odors originating at the Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).

viii. Ponds shall not have a pH less than 6.0 or greater than 9.0.

b. **Effluent Diffuser Line.** The effluent outfall and diffuser line shall be maintained to ensure proper function and flow-through capacity.

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 C.F.R. 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 C.F.R. section 403.8(f)(1);

(b) Enforce the pretreatment requirements under 40 C.F.R. sections 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 MRP, section X.D.4 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 Facility. 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 CCR, Title 27, 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 WDR's 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 Facility 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 of the MRP, 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. **Collection System.** The Discharger is subject to the requirements of, and must comply with State Water Board Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent order.

d. **Interagency Agreements.** Limited portions of the wastewater collection system may be outside the service area of the Discharger. In order to assure compliance with the Discharge Prohibitions and to assure protection of the entire collection system and treatment works from industrial discharges, it is necessary that the Discharger control discharges into the system. To control discharges into the entire

collection system, the Discharger shall establish interagency agreements with the collection system owners. The interagency agreements shall contain, at a minimum, requirements for implementation of an industrial pretreatment program that meets the minimum requirements of this permit. The Discharger shall comply with the following time schedule:

Task	Compliance Date
Submit interagency agreements for new connections	**30 days prior to connection**

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Sections IV.A.1.a and IV.A.1.b). Compliance with the final effluent limitations for BOD_5 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 BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Average Dry Weather Flow Prohibition (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 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.e). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a MPN of 23 per 100 milliliters, the Discharger will be considered out of compliance.

D. Instantaneous Minimum and Maximum Effluent Limitation for pH (Section IV.A.1.a). If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for pH, the Discharger will be considered out of compliance for pH for that single sample. Noncompliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of noncompliance with the instantaneous minimum effluent limitation). If pH is monitored continuously, the Discharger shall be in compliance with pH limitations provided that the total excursion time does not exceed 20 minutes within a calendar day. For the purpose of establishing a pH excursion, a 20-minute running average may be used (measured continuously at no greater than 5-second intervals).

E. 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).

F. Mass Effluent Limitations. The mass effluent limitations contained in section 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 section 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.

G. 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, the median is the middle value. If the data set has an even number of data points, the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an

effluent limitation and the Discharger conducts a PMP (as described in section 2.4.5.1), the Discharger shall not be deemed out of compliance.

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

I. Dissolved Oxygen Receiving Water Limitations (Section V.A.5.a-d). The Facility provides a high level of treatment including filtration and nitrification, which results in minimal dissolved oxygen impacts in the receiving water. Weekly receiving water monitoring is required in the MRP (Attachment E) and is sufficient to evaluate the impacts of the discharge and compliance with this Order. Weekly receiving water monitoring data, measured at Monitoring Locations RSW-001 and RSW-002 will be used to determine compliance with parts "c" and "d" of the dissolved oxygen receiving water limitation to ensure the discharge does not cause the dissolved oxygen concentrations in the Sacramento River to be reduced below 7.0 mg/L (or 9.0 mg/L from 1 June to 31 August) at any time. However, should more frequent dissolved oxygen and temperature receiving water monitoring be conducted, Central Valley Water Board staff may evaluate compliance with parts "a" and "b".

J. Temperature Receiving Water Limitation (Section V.A.16). Compliance with the temperature receiving water limitation will be determined based on the difference in the temperature measured at Monitoring Location RSW-001 as compared to the downstream temperature measured at Monitoring Location RSW-002.

K. Turbidity Receiving Water Limitations (Section V.A.18.a-e). Compliance with the turbidity receiving water limitations will be determined based on the change in turbidity measured at Monitoring Location RSW-001 as compared to the downstream turbidity measured at Monitoring Location RSW-002.

L. Reporting Due Dates. For reports specified in this Order, if the due date is on a Saturday, Sunday, State Holiday, or a day that corresponding Water Board(s) office(s) is closed, the due date shall be on the next business day.

A.

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 incapitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC_{25} 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). IC_{25} 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 concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in in 40 C.F.R. part 136, Attachment B, revised as of July 3, 1999.

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

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

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:

$$\text{Percent Effect at the IWC} = \frac{\text{Mean Control Response - Mean IWC Response}}{\text{Mean Control Response}} \bullet 100$$

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:

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

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

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

B.

ATTACHMENT B – MAP

Figure B-1. Location Map

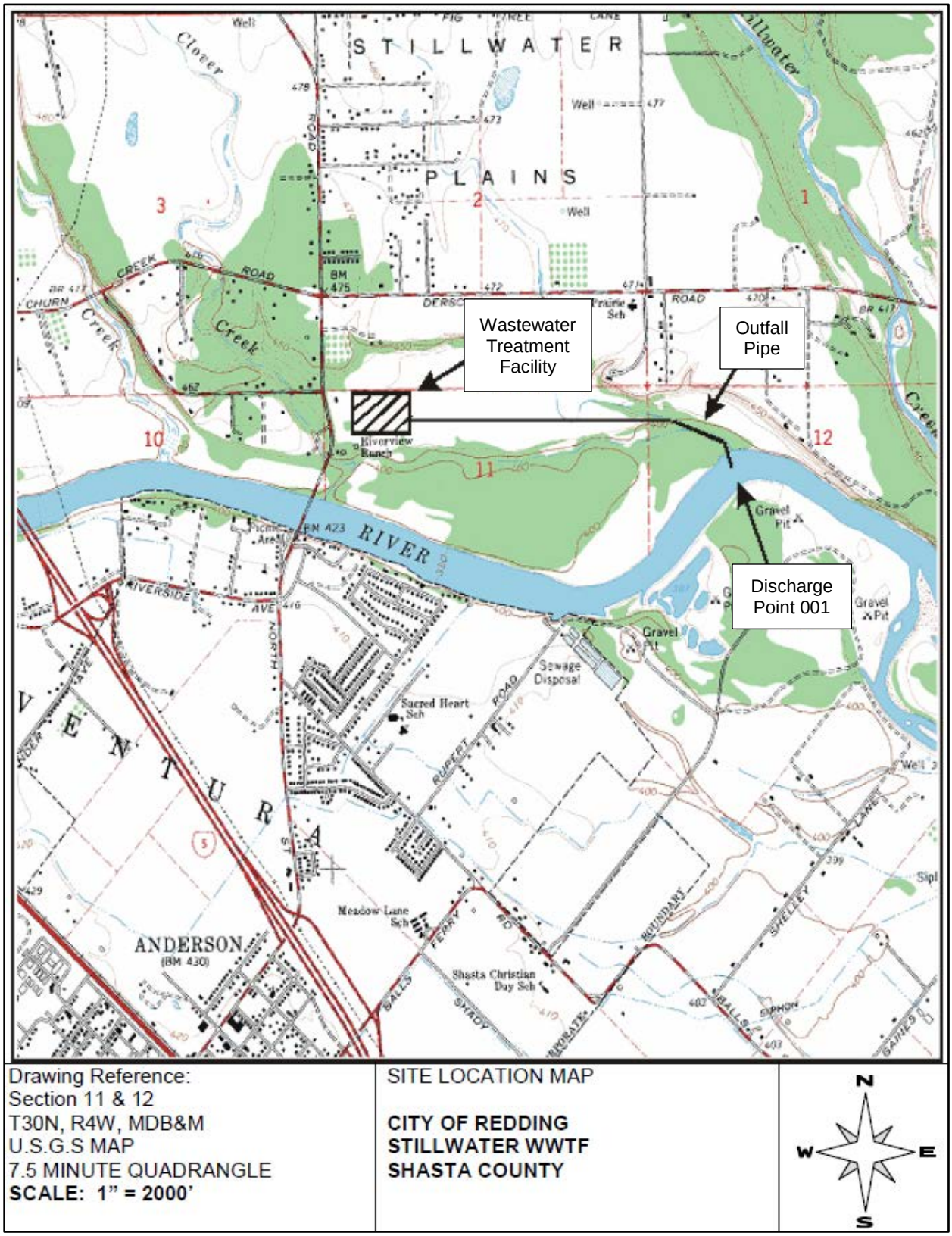


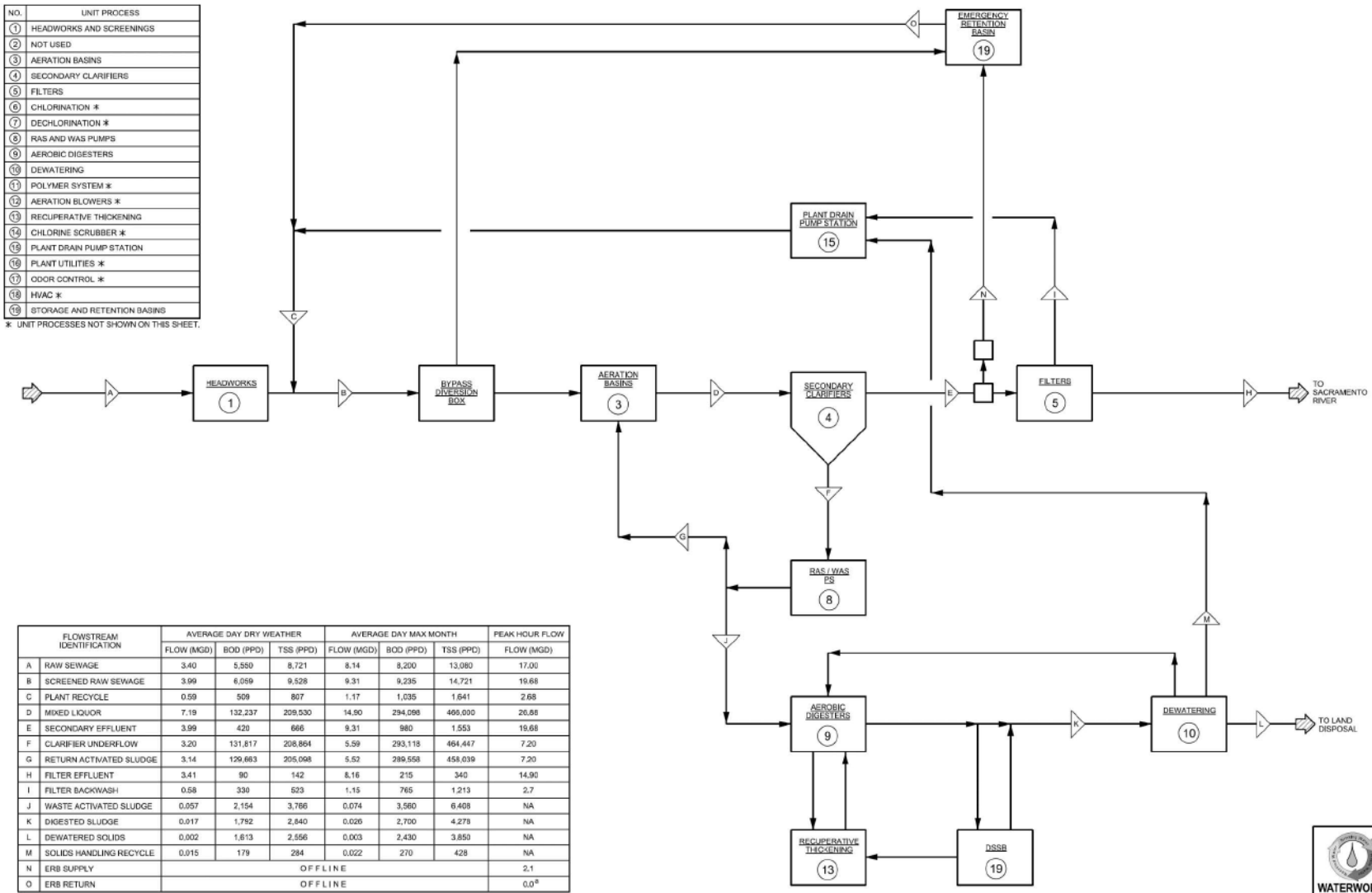
Figure B-2. Facility Site Plan

C.

ATTACHMENT C – FLOW SCHEMATIC

NO.	UNIT PROCESS
1	HEADWORKS AND SCREENINGS
2	NOT USED
3	AERATION BASINS
4	SECONDARY CLARIFIERS
5	FILTERS
6	CHLORINATION *
7	DECHLORINATION *
8	RAS AND WAS PUMPS
9	AEROBIC DIGESTERS
10	DEWATERING
11	POLYMER SYSTEM *
12	AERATION BLOWERS *
13	RECUPERATIVE THICKENING
14	CHLORINE SCRUBBER *
15	PLANT DRAIN PUMP STATION
16	PLANT UTILITIES *
17	ODOR CONTROL *
18	HVAC *
19	STORAGE AND RETENTION BASINS

* UNIT PROCESSES NOT SHOWN ON THIS SHEET.



	FLOWSTREAM IDENTIFICATION	AVERAGE DAY DRY WEATHER			AVERAGE DAY MAX MONTH			PEAK HOUR FLOW
		FLOW (MGD)	BOD (PPD)	TSS (PPD)	FLOW (MGD)	BOD (PPD)	TSS (PPD)	FLOW (MGD)
A	RAW SEWAGE	3.40	5,550	8,721	8.14	8,200	13,080	17.00
B	SCREENED RAW SEWAGE	3.99	6,059	9,528	9.31	9,235	14,721	19.68
C	PLANT RECYCLE	0.59	509	807	1.17	1,035	1,641	2.68
D	MIXED LIQUOR	7.19	132,237	209,530	14.90	294,096	466,000	26.88
E	SECONDARY EFFLUENT	3.99	420	666	9.31	980	1,553	19.68
F	CLARIFIER UNDERFLOW	3.20	131,817	208,864	5.59	293,118	464,447	7.20
G	RETURN ACTIVATED SLUDGE	3.14	129,663	205,098	5.52	289,558	458,039	7.20
H	FILTER EFFLUENT	3.41	90	142	8.16	215	340	14.90
I	FILTER BACKWASH	0.58	330	523	1.15	765	1,213	2.7
J	WASTE ACTIVATED SLUDGE	0.057	2,154	3,766	0.074	3,560	6,408	NA
K	DIGESTED SLUDGE	0.017	1,792	2,840	0.026	2,700	4,278	NA
L	DEWATERED SOLIDS	0.002	1,613	2,556	0.003	2,430	3,850	NA
M	SOLIDS HANDLING RECYCLE	0.015	179	284	0.022	270	428	NA
N	ERB SUPPLY	OFFLINE						2.1
O	ERB RETURN	OFFLINE						0.0[a]

[a] ERB SUPPLY STORED IN 10.3 MG EMERGENCY RETENTION BASIN, RETURNED TO HEADWORKS AFTER RAW SEWAGE FLOWS SUBSIDE.

CONFORMED DOCUMENTS

ORIGINAL SCALE IN INCHES 0 1 2

DESIGNED BY A.BORGIC
DRAWN BY M STEELE
REVIEWED BY J GESELBRACHT

CITY OF REDDING
PUBLIC WORKS DEPARTMENT

STILLWATER WASTEWATER TREATMENT PLANT
PHASE 1A/1B EXPANSION PROJECT
JOB NO. 2278 BID SCH NO.4471
GENERAL
FLOW / MASS BALANCE

WATERWORKS ENGINEERS

A-23846
ORIGINAL SCALE: NTS
DATE: JULY 2012
SHEET: 7 OF 219
G-7

D.

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 5 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 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 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. The 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 could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii))

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 (POTW's)

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))

E.

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all National Pollutant Discharge Elimination System (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, 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, dissolved oxygen, turbidity, temperature, and residual chlorine must be kept onsite in the 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 MRP.

F. Laboratories analyzing monitoring samples shall be certified 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 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 MRP.

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	Location where a representative sample of the influent into the Facility can be collected prior to entering into the treatment process. Latitude: 40° 28’ 39.6” N, Longitude: 122° 17’ 28.2” W
001	EFF-001	Final treated effluent downstream from last connection through which wastes can be admitted into the outfall. Latitude: 40° 28’ 23.48” N, Longitude: 122° 16’ 10.5” W
001	EFF-002	Final treated effluent downstream from Monitoring Location EFF-001, at the bubble trap.
--	LND-001	A location where a representative sample of wastewater from the Primary Emergency Retention Basin (East Pond) can be collected.
--	LND-002	A location where a representative sample of wastewater from the Secondary Emergency Retention Basin/Digested Solids Storage Basin (West Pond) can be collected.
--	REC-001	A location where a representative sample of recycled water can be obtained.
--	RSW-001	Sacramento River, approximately 100 feet upstream of the City of Anderson Water Pollution Control Plant Outfall. Latitude: 40° 28’ 4.6” N, Longitude 122° 16’ 43” W
--	RSW-002	Sacramento River, approximately 1,000 feet downstream of Discharge Point 001.
--	BIO-001	A location where a representative sample of the 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 are approximate for administrative purposes.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
pH	standard units	Meter	Continuous	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
Priority Pollutants				
Total Recoverable Metals[3]	µg/L	24-hr Composite[1]	1/Year	[2]

[1] 24-hour flow proportional composite.

[2] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

[3] Cadmium, copper, lead, nickel, silver, and zinc. Influent hardness and pH shall be determined at the same time. Sample shall be collected at the same time effluent samples are obtained for priority pollutant analyses.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor advanced secondary treated effluent at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level (ML):

Table E-3. Effluent Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20° C)	mg/L	24-hr Composite[1]	1/Week	[2]
pH	standard units	Meter	Continuous[3]	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
Priority Pollutants				
Chlorodibromomethane	µg/L	Grab	1/Month	[2,4]
Copper, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,4]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Cyanide, Total (as CN)	µg/L	Grab	1/Month	[2,4]
Dichlorobromomethane	µg/L	Grab	1/Month	[2,4]
Zinc, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,4]
Priority Pollutants and Other Constituents of Concern	See Section IX.C	See Section IX.C	See Section IX.C	[2,4]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month[3,5]	[2]
	lbs/day	Calculate	1/Month	--
Ammonia Nitrogen, Unionized (as N)	mg/L	Grab	1/Month[3,5]	[2]
Chlorine, Total Residual	mg/L	Meter	Continuous	[2,6]
Chlorpyrifos	µg/L	Grab	1/Year	[2,7]
Diazinon	µg/L	Grab	1/Year	[2,7]
Dissolved Oxygen	mg/L	Grab	2/Month	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[2]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month[8]	[2]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month[8]	[2]
Nitrate Plus Nitrite, Total (as N)	mg/L	Calculate	1/Month	--
Standard Minerals[9]	mg/L	Grab	1/Year	[2]
Temperature	°F (°C)	Grab	1/Week	[2]
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]

1 24-hour flow proportional composite.

2 Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

3 pH shall be recorded at the time of ammonia sample collection.

4 For priority pollutant constituents, the reporting level (RL) 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).

5 Concurrent with whole effluent toxicity (WET) monitoring.

6 Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

7 Chlorpyrifos and diazinon shall be sampled using U.S. EPA Method 625M, Method 8141, or equivalent GC/MS method.

8 Monitoring for nitrite and nitrate shall be conducted concurrently.

9 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).

2. If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be

required to monitor and record data more often than twice the frequencies listed in the schedule.

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 chronic toxicity testing. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by the result greater than 2 TUc (as $100/EC_{25}$) AND a percent effect greater than 25 percent at 50 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and performing chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least 1 week apart, and the final monitoring event shall be collected no later than 6 weeks from the routine monitoring event that exhibited toxicity.
2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-002. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this MRP.
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:
   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 (Method Manual).

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-4, below. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, 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-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions[1] (%)					Control
	100	75	50	25	12.5	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

[1] 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 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 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, WET monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Routine and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the annual self-monitoring report (SMR) and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the 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 SMR's 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 quarterly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TRE's shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work Plan, 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

A. Monitoring Locations LND-001 and LND-002

1. The Discharger shall monitor the emergency storage basins at Monitoring Locations LND-001 and LND-002, respectively, as follows:

Table E-5. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Freeboard	Feet	Measure	1/Month	--

VII. RECYCLING MONITORING REQUIREMENTS

A. Monitoring Location REC-001

1. The Discharger shall monitor the recycled water flow at Monitoring Location REC-001 as follows:

Table E-6. Recycling Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency[1]	Required Analytical Test Method
Flow	Gallons	Meter	1/Day	--
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	[2]

[1] Monitoring shall be conducted when recycled water is being used for crop irrigation.

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

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Locations RSW-001 and RSW-002

1. The Discharger shall monitor the Sacramento River at Monitoring Locations RSW-001 and RSW-002 as follows:

Table E-7. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cfs	Gauge[1,2]	1/Day	--
Conventional Pollutants				
pH	standard units	Grab	1/Week[3]	[4]
Priority Pollutants				
Chlorodibromomethane	µg/L	Grab	1/Year[2]	[4,5]
Copper, Total Recoverable	µg/L	Grab	1/Month[2,6]	[4,5]
Copper, Dissolved	µg/L	Grab	1/Month[2,6]	[4,5]
Cyanide, Total (as CN)	µg/L	Grab	1/Month[2]	[4,5]
Dichlorobromomethane	µg/L	Grab	1/Year[2]	[4,5]
Zinc, Total Recoverable	µg/L	Grab	1/Month[2,6]	[4,5]
Zinc, Dissolved	µg/L	Grab	1/Month[2,6]	[4,5]
Priority Pollutants and Other Constituents of Concern	See Section IX.C	See Section IX.C	See Section IX.C	[2,4,5]
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab	1/Week[3]	[4]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week[3]	[4]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[4]
Standard Minerals[7]	mg/L	Grab	1/Year[6]	[4]
Temperature	°F (°C)	Grab	1/Week[3]	[4]
Turbidity	NTU	Grab	1/Week[3]	[4]

1 The location and/or source of the gauge(s) must be approved by the Executive Officer.

2 Monitoring required at Monitoring Location RSW-001 only.

3 A hand-held field meter may be used, 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 MRP shall be maintained at the Facility.

4 Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

5 For priority pollutant constituents, the reporting level shall be consistent with sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment E, section IX.C).

6 Receiving water pH and hardness shall be recorded at the time of sampling for copper, zinc, and standard minerals.

7 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).

2. In conducting receiving water sampling when discharging to the Sacramento River at Discharge Point 001, a log shall be kept of the receiving water conditions throughout the

reach bounded by Monitoring Locations RSW-001 and RSW-002. Attention shall be given to the presence or absence 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.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with U.S. EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 C.F.R. part 122, Appendix D, Tables II and III (excluding total phenols).

b. Biosolids monitoring shall be conducted using the methods in Test Methods for Evaluating Solid Waste, Physical/Chemical methods (U.S. EPA publication SW-846), as required in 40 C.F.R. section 503.8(b)(4). All results must be reported on a 100 percent dry weight basis. Records of all analyses must state on each page of the laboratory report whether the results are expressed in “100 percent dry weight” or “as is.”

B. Municipal Water Supply

1. Monitoring Location SPL-001

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

Table E-8. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants				
Copper, Total Recoverable	µg/L	Grab	1/Quarter	[1,2]
Zinc, Total Recoverable	µg/L	Grab	1/Quarter	[1,2]
Non-Conventional Pollutants				
Electrical Conductivity @ 25°C[3]	µmhos/cm	Grab	1/Quarter	[1]
Standard Minerals[4]	mg/L	Grab	1/Year	[1]
Total Dissolved Solids[3]	mg/L	Grab	1/Quarter	[1]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

[2] 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, section IX.C).

[3] If the water supply is from more than one source, the electrical conductivity and total dissolved solids shall be reported as a weighted average and include copies of supporting calculations.

[4] 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).

C. 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 during the year 2021 (four consecutive samples, evenly distributed throughout the year) and the results of such monitoring shall be submitted to the Central Valley Water Board with the monthly SMR's. 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. **Sample Type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-9, below.

Table E-9. Effluent and Receiving Water Characterization Monitoring

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
	VOLATILE ORGANICS			
25	2-Chloroethyl vinyl ether	µg/L	Grab	1
17	Acrolein	µg/L	Grab	2
18	Acrylonitrile	µg/L	Grab	2
19	Benzene	µg/L	Grab	0.5
20	Bromoform[5]	µg/L	Grab	0.5
21	Carbon Tetrachloride	µg/L	Grab	0.5
22	Chlorobenzene	µg/L	Grab	0.5
24	Chloroethane	µg/L	Grab	0.5
26	Chloroform[5]	µg/L	Grab	2
35	Chloromethane (aka Methyl Chloride)	µg/L	Grab	2
23	Dibromochloromethane[5]	µg/L	Grab	0.5
27	Dichlorobromomethane[5]	µg/L	Grab	0.5
36	Dichloromethane (aka Methylene Chloride)	µg/L	Grab	2
33	Ethylbenzene	µg/L	Grab	2
88	Hexachlorobenzene	µg/L	Grab	1
89	Hexachlorobutadiene	µg/L	Grab	1
91	Hexachloroethane	µg/L	Grab	1
34	Methyl bromide (Bromomethane)	µg/L	Grab	1
94	Naphthalene	µg/L	Grab	10
38	Tetrachloroethene (PCE)	µg/L	Grab	0.5
39	Toluene	µg/L	Grab	2

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
40	trans-1,2-Dichloroethylene	µg/L	Grab	1
43	Trichloroethene (TCE)	µg/L	Grab	2
44	Vinyl chloride	µg/L	Grab	0.5
	Methyl-tert-butyl ether (MTBE)	µg/L	Grab	--
	Trichlorofluoromethane (Freon 11)	µg/L	Grab	--
41	1,1,1-Trichloroethane	µg/L	Grab	0.5
42	1,1,2- Trichloroethane	µg/L	Grab	0.5
28	1,1-dichloroethane	µg/L	Grab	0.5
30	1,1-dichloroethylene	µg/L	Grab	0.5
31	1,2-dichloropropane	µg/L	Grab	0.5
32	1,3-dichloropropylene	µg/L	Grab	0.5
37	1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 13)	µg/L	Grab	0.5
101	1,2,4-trichlorobenzene	µg/L	Grab	1
29	1,2-dichloroethane	µg/L	Grab	0.5
75	1,2-dichlorobenzene	µg/L	Grab	0.5
76	1,3-dichlorobenzene	µg/L	Grab	0.5
77	1,4-dichlorobenzene	µg/L	Grab	0.5
	Styrene	µg/L	Grab	--
	Xylenes	µg/L	Grab	--
	SEMI-VOLATILE ORGANICS			
60	1,2-Benzanthracene (a.k.a. Benzo(a)anthracene)	µg/L	Grab	5
85	1,2-Diphenylhydrazine	µg/L	Grab	1
45	2-Chlorophenol	µg/L	Grab	5
46	2,4-Dichlorophenol	µg/L	Grab	5
47	2,4-Dimethylphenol	µg/L	Grab	2
49	2,4-Dinitrophenol	µg/L	Grab	5
82	2,4-Dinitrotoluene	µg/L	Grab	5
55	2,4,6-Trichlorophenol	µg/L	Grab	10
83	2,6-Dinitrotoluene	µg/L	Grab	5
50	2-Nitrophenol	µg/L	Grab	10
71	2-Chloronaphthalene	µg/L	Grab	10
78	3,3'-Dichlorobenzidine	µg/L	Grab	5
62	3,4-Benzofluoranthene (a.k.a. Benzo(b)fluoranthene)	µg/L	Grab	10
52	4-Chloro-3-methylphenol	µg/L	Grab	5
48	4,6-Dinitro-2-methylphenol	µg/L	Grab	10
51	4-Nitrophenol	µg/L	Grab	10
69	4-Bromophenyl phenyl ether	µg/L	Grab	10
72	4-Chlorophenyl phenyl ether	µg/L	Grab	5
56	Acenaphthene	µg/L	Grab	1
57	Acenaphthylene	µg/L	Grab	10
58	Anthracene	µg/L	Grab	10
59	Benzidine	µg/L	Grab	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
63	Benzo(g,h,i)perylene	µg/L	Grab	5
64	Benzo(k)fluoranthene	µg/L	Grab	2
65	Bis(2-chloroethoxy) methane	µg/L	Grab	5
66	Bis(2-chloroethyl) ether	µg/L	Grab	1
67	Bis(2-chloroisopropyl) ether	µg/L	Grab	10
68	Bis(2-ethylhexyl) phthalate[2]	µg/L	Grab	5
70	Butyl benzyl phthalate	µg/L	Grab	10
73	Chrysene	µg/L	Grab	5
81	Di-n-butylphthalate	µg/L	Grab	10

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
84	Di-n-octylphthalate	µg/L	Grab	10
74	Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
79	Diethyl phthalate	µg/L	Grab	10
80	Dimethyl phthalate	µg/L	Grab	10
86	Fluoranthene	µg/L	Grab	10
87	Fluorene	µg/L	Grab	10
90	Hexachlorocyclopentadiene	µg/L	Grab	5
92	Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
93	Isophorone	µg/L	Grab	1
98	N-Nitrosodiphenylamine	µg/L	Grab	1
96	N-Nitrosodimethylamine	µg/L	Grab	5
97	N-Nitrosodi-n-propylamine	µg/L	Grab	5
95	Nitrobenzene	µg/L	Grab	10
53	Pentachlorophenol	µg/L	Grab	1
99	Phenanthrene	µg/L	Grab	5
54	Phenol	µg/L	Grab	1
100	Pyrene	µg/L	Grab	10
	INORGANICS			
	Aluminum	µg/L	24-hr Composite[3]	--
1	Antimony	µg/L	24-hr Composite[3]	5
2	Arsenic	µg/L	24-hr Composite[3]	2
15	Asbestos	MFL	24-hr Composite[3]	--
	Barium	µg/L	24-hr Composite[3]	--
3	Beryllium	µg/L	24-hr Composite[3]	2
4	Cadmium	µg/L	24-hr Composite[3]	0.25
5a (Cr III)	Chromium (Total)	µg/L	24-hr Composite[3]	10
5b	Chromium (VI)	µg/L	24-hr Composite[3]	10
6	Copper	µg/L	24-hr Composite[3]	0.5
	Iron	µg/L	24-hr Composite[3]	--
7	Lead	µg/L	24-hr Composite[3]	0.5
8	Mercury	µg/L	24-hr Composite[3]	0.2
	Manganese	µg/L	24-hr Composite[3]	--
	Molybdenum	µg/L	24-hr Composite[3]	--
9	Nickel	µg/L	24-hr Composite[3]	20
10	Selenium	µg/L	24-hr Composite[3]	2
11	Silver	µg/L	24-hr Composite[3]	0.25
12	Thallium	µg/L	24-hr Composite[3]	1
13	Zinc	µg/L	24-hr Composite[3]	10
	NON-METALS/MINERALS			
	Boron	µg/L	24-hr Composite[3]	--
	Chloride	mg/L	24-hr Composite[3]	--
14	Cyanide	µg/L	24-hr Composite[3]	5
	Fluoride	µg/L	24-hr Composite[3]	--
	Phosphorus, Total (as P)	mg/L	24-hr Composite[3]	--
	Sulfate	mg/L	Grab	--
	Sulfide (as S)	mg/L	Grab	--
	Sulfite (as SO_3)	mg/L	Grab	--
	PESTICIDES/PCBs/DIOXINS			
110	4,4'-DDD	µg/L	24-hr Composite[3]	0.05
109	4,4'-DDE	µg/L	24-hr Composite[3]	0.05
108	4,4'-DDT	µg/L	24-hr Composite[3]	0.01
112	alpha-Endosulfan	µg/L	24-hr Composite[3]	0.02
103	alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite[3]	0.01
	Alachlor	µg/L	24-hr Composite[3]	
102	Aldrin	µg/L	24-hr Composite[3]	0.005

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
113	beta-Endosulfan	µg/L	24-hr Composite[3]	0.01
104	beta-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite[3]	0.005
107	Chlordane	µg/L	24-hr Composite[3]	0.1
106	delta-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite[3]	0.005
111	Dieldrin	µg/L	24-hr Composite[3]	0.01
114	Endosulfan sulfate	µg/L	24-hr Composite[3]	0.01
115	Endrin	µg/L	24-hr Composite[3]	0.01
116	Endrin Aldehyde	µg/L	24-hr Composite[3]	0.01
117	Heptachlor	µg/L	24-hr Composite[3]	0.01
118	Heptachlor Epoxide	µg/L	24-hr Composite[3]	0.02
105	Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite[3]	0.5
119	PCB-1016	µg/L	24-hr Composite[3]	0.5
120	PCB-1221	µg/L	24-hr Composite[3]	0.5
121	PCB-1232	µg/L	24-hr Composite[3]	0.5
122	PCB-1242	µg/L	24-hr Composite[3]	0.5
123	PCB-1248	µg/L	24-hr Composite[3]	0.5
124	PCB-1254	µg/L	24-hr Composite[3]	0.5
125	PCB-1260	µg/L	24-hr Composite[3]	0.5
126	Toxaphene	µg/L	24-hr Composite[3]	--
	Atrazine	µg/L	24-hr Composite[3]	--
	2,4-D (2,4-Dichlorophenoxyacetic acid)	µg/L	24-hr Composite[3]	--
	Carbofuran	µg/L	24-hr Composite[3]	--
	Carbaryl	µg/L	24-hr Composite[3]	
	Gylphosate	µg/L	24-hr Composite[3]	
	Simazine (Princep)	µg/L	24-hr Composite[3]	--
	Thiobencarb	µg/L	24-hr Composite[3]	--
16	2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite[3]	--
	CONVENTIONAL PARAMETERS			
	pH	Std Units	Grab	--
	Temperature	°C	Grab	--
	NONCONVENTIONAL PARAMETERS			
	Hardness (as CaCO3)	mg/L	Grab	--
	Foaming Agents (methylene blue active substances)	µg/L	24-hr Composite[3]	--
	Mercury, Methyl	ng/L	Grab	--
	NUTRIENTS			
	Ammonia (as N)	mg/L	24-hr Composite[3]	--
	Nitrate (as N)	mg/L	24-hr Composite[3]	--
	Nitrite (as N)	mg/L	24-hr Composite[3]	--

[1] 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.

[2] 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.

[3] 24-hour flow proportional composite.

[4] The Discharger is not required to conduct effluent or receiving water monitoring for constituents that have already been sampled in a given month, as required in Table E-3 and/or Table E-5, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.

[5] Bromoform and chloroform sampling shall be conducted concurrently with chlorodibromomethane and dichlorobromomethane for assessment of total trihalomethanes (TTHM) concentration.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

B. Self-Monitoring Reports (SMR's)

1. The Discharger shall electronically submit SMR's using the State Water Board's California Integrated Water Quality System (CIWQS) Program website 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 SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors for 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 SMR's 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/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

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
2/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
1/Year	Permit effective date	1 January through 31 December	1 February of following year

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable 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 (± 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 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 average monthly effluent limitation (AMEL), average weekly effluent limitation (AWEL), or maximum daily effluent limitation (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 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, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

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

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

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

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

c. The Discharger shall attach all laboratory analysis sheets, including quality assurance/quality control information, with all its SMR's for which sample analyses were performed.

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

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

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

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

b. **Removal Efficiency (BOD_5 and TSS).** The Discharger shall calculate and report the percent removal of BOD_5 and TSS in the SMR's. The percent removal shall be calculated as specified in section VII.A of the Waste Discharger Requirements.

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

d. **Chlorpyrifos and Diazinon Effluent Limitations**. The Discharger shall calculate and report the value of S_{AMEL} and S_{AWEL} for the effluent, using the equations in section IV.A.1.f of the Order, and consistent with the Compliance Determination Language in section VII.H 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 (Monitoring Location EFF-001) and the receiving water (Monitoring Locations 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)

DMR's 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 is available at the DMR website at: http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/.

D. Other Reports

1. **Special Study Technical Reports and Progress Reports**. Special Provisions contained in section VI of the Waste Discharge Requirements include requirements to submit special study technical reports and progress reports. Table E-11 summarizes the technical reports required by the Special Provisions and due dates for report submittal. All special study technical reports and progress reports shall be submitted electronically via CIWQS submittal. Reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment. If there are any discrepancies between the information presented in Table E-11 and the Special Provisions (section VI of the Waste Discharge Requirements), the information in the Special Provisions shall supersede the information in Table E-11.

Table E-11. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Salinity Evaluation and Minimization Plan, Progress Report (Special Provision VI.C.3.a)	Submit with Report of Waste Discharge (ROWD)

2. Within 60 days of permit adoption, the Discharger shall submit a report electronically, via CIWQS submittal, outlining RL's, MDL's, and analytical methods for the constituents listed in Tables E-2, E-3, E-5, E-6, E-7, and E-8. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in sections 2.3 and 2.4 of the SIP. The maximum required RL's for priority pollutant constituents shall be based on the 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 provides required maximum RL's in accordance with the SIP.

3. **Annual Operations Report.** By 1 February of each year, the Discharger shall submit a written report to the Central Valley Water Board electronically via CIWQS submittal containing the following:

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

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

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

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the Facility 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 WDR's.

4. **Annual Pretreatment Reporting Requirements**. The Discharger shall submit annually a report to the Central Valley Water Board, with copies to U.S. EPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months (1 January through 31 December). In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

   An annual report shall be submitted by **28 February** and include at least the following items:

   a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants U.S. EPA has identified under section 307(a) of the CWA that are known or suspected to be discharged by nondomestic users. This will consist of an annual full priority pollutant scan. The Discharger is not required to sample and analyze for asbestos. The Discharger shall submit the results of the annual priority pollutant scan electronically to the Central Valley Water Board using the State Water Board's CIWQS Program Website.

      Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The Discharger shall also provide any influent, effluent, or sludge monitoring data for non-priority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 C.F.R. part 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the Facility, which the Discharger knows or suspects were caused by nondomestic users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

c. The cumulative number of nondomestic users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of nondomestic user responses.

d. An updated list of the Discharger's significant industrial users (SIU's) including their names and addresses, or a list of deletions, additions, and SIU name changes keyed to a previously submitted list. The Discharger shall provide a brief explanation for each change. The list shall identify the SIU's subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIU's, or specific pollutants from each industry, are subject to local limitations. Local limitations that are more stringent than the federal categorical standards shall also be identified.

e. The Discharger shall characterize the compliance status through the year of record of each SIU by employing the following descriptions:

   i. Complied with Baseline Monitoring Report requirements (where applicable);

   ii. Consistently achieved compliance;

   iii. Inconsistently achieved compliance;

   iv. Significantly violated applicable pretreatment requirements as defined by 40 C.F.R. section 403.8(f)(2)(vii);

   v. Complied with schedule to achieve compliance (include the date final compliance is required);

   vi. Did not achieve compliance and not on a compliance schedule; and

   vii. Compliance status unknown.

f. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the SIU's. The summary shall include:

   i. The names and addresses of the SIU's subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and

   ii. The conclusions or results from the inspection or sampling of each industrial user.

g. The Discharger shall characterize the compliance status of each SIU by providing a list or table which includes the following information:

   i. Name of SIU;

   ii. Category, if subject to federal categorical standards;

   iii. The type of wastewater treatment or control processes in place;

iv. The number of samples taken by the POTW during the year;

v. The number of samples taken by the SIU during the year;

vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;

vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits.

viii. Whether the facility is in significant noncompliance (SNC) as defined at 40 C.F.R. section 403.8(f)(2)(viii) at any time during the year; and

ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action (e.g., warning letters or notices of violation, administrative orders, civil actions, and criminal actions), final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;

x. Restriction of flow to the POTW.

xi. Disconnection from discharge to the POTW.

h. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIU's;

i. A brief description of any significant changes in operating the pretreatment program that differ from the previous year including, but not limited to, changes concerning: the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;

j. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and

k. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 C.F.R. section 403.8(f)(2)(viii).

Pretreatment Program reports shall be electronically submitted to the following:

State Water Resources Control Board: NPDES_Wastewater@waterboards.ca.gov
EPA Regional Administrator: R9Pretreatment@epa.gov
Central Valley Water Board: centralvalleyredding@waterboards.ca.gov

F.

ATTACHMENT F – FACT SHEET

Contents

Tables

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

WDID	5A450103004
CIWQS Facility Place ID	258676
Discharger	City of Redding
Name of Facility	Stillwater Wastewater Treatment Facility
Facility Address	6475 Airport Road
	Anderson, CA 96007
	Shasta County
Facility Contact, Title and Phone	Dave Johnston, Public Works Supervisor, (530) 378-6702
Authorized Person to Sign and Submit Reports	Ryan Bailey, Assistant Director of Public Works, (530) 224-6030 Dave Johnston, Public Works Supervisor, (530) 378-6702 Josh Keener, Wastewater Compliance Coordinator
Mailing Address	P.O. Box 917, Anderson, CA 96007
Billing Address	P.O. Box 496071, Redding, CA 96049
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Yes
Recycling Requirements	Producer
Facility Permitted Flow	3.4 million gallons per day (MGD), average dry weather flow
Facility Design Flow	3.4 MGD, average dry weather flow 14.4 MGD, peak wet weather flow
Watershed	Sacramento-Lower Cow-Lower Clear
Receiving Water	Sacramento River
Receiving Water Type	Inland Surface Water

A. The City of Redding (hereinafter Discharger) is the owner and operator of the Stillwater Wastewater Treatment Facility (hereinafter Facility), a POTW.

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

B. The Facility discharges wastewater to the Sacramento River, a water of the United States, within the Sacramento-Lower Cow-Lower Clear Watershed. The Discharger was previously regulated by Order R5-2013-0043 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0082589 adopted on 30 May 2013 with an expiration date of 1 July 2018. 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 Resources Control Board (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 29 December 2017. Supplemental information was provided on 19 January 2018. The ROWD and application was deemed complete on 9 February 2018. A site visit was conducted on 21 June 2017 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

E. Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed 5 years. Accordingly, Table 3 of this Order limits the duration of the discharge authorization. However, pursuant to California Code of Regulations (CCR), 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 community of Redding and serves a population of approximately 24,000. The Facility's design average dry weather flow capacity for advanced secondary treated wastewater is 3.4 MGD.

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility consists of influent screening for removal of large solids, activated sludge treatment with secondary clarification, filtration, and chlorination/dechlorination.

Waste activated sludge is treated by aerobic digestion followed by dewatering using a belt filter press. Biosolids are disposed of at a sanitary landfill and land applied at the Redding Municipal Airport, which is a property owned by the Discharger. The Facility produces approximately 390.94 dry metric tons of dried biosolids, annually. Transportation and disposal/reuse of the biosolids are regulated by U.S. EPA under 40 C.F.R. part 503.

B. Discharge Points and Receiving Waters

1. The Facility is located in Sections 11 and 12, T30N, R4W, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to the Sacramento River, a water of the United States, at a point latitude 40° 28' 23.48" N and longitude 122° 16' 10.5" W.
3. Discharge Point 001 is located within the Enterprise Flat Hydrologic Area (508.10) of the Redding Hydrologic Unit, as defined by the interagency hydrologic map for the Sacramento Hydrologic Basin prepared by the Department of Water Resources (1986).

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

Effluent limitations contained in Order R5-2013-0043 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2013-0043 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (May 2014 – April 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	--	--	3.4[1]	--	--	13.7[2]
Conventional Parameters							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30	3.52	5.01	5.01
	lbs/day[3]	284	425	851	213	299	299
	% Removal	85	--	--	95.5[4]	--	--
pH	standard units	--	--	6.0 – 8.5	--	--	4.5 – 10.7
Total Suspended Solids	mg/L	10	15	30	2.3	3.2	3.2
	lbs/day[3]	284	425	851	154	197	197
	% Removal	85	--	--	97.5[4]	--	--
Priority Pollutants							
Beta-BHC	µg/L	0.014	--	0.028	ND	--	ND
Carbon Tetrachloride	µg/L	1.3	--	3.8	0.13	--	0.13
Chlorodibromomethane	µg/L	3.7	--	8.6	8.93	--	8.93
Copper, Total Recoverable	µg/L	25.2	--	38.2	21.2	--	21.2
Cyanide	µg/L	12.2	--	24	5.6	--	5.6
Dichlorobromomethane	µg/L	22.2	--	46.2	24.3	--	24.3
Zinc, Total Recoverable	µg/L	100.5	--	150.7	115	--	115
Non-Conventional Pollutants							
Ammonia, Total (as N)	mg/L	0.94	--	2.14	3.7[5]	--	3.7[5]
Chlorine, Total Residual	mg/L	--	0.011[6]	0.019[7]	--	--	
Chlorpyrifos	µg/L	[8]	--	[9]	ND	--	ND
Diazinon	µg/L	[8]	--	[9]	ND	--	ND
Nitrate Plus Nitrite, Total (as N)	mg/L	30	--	--	29.1	--	--
Total Coliform Organisms	MPN/100 mL	23[10]	240[11]	500[12]	--	--	23
Acute Toxicity	% Survival	--	--	70[13]/90[14]	--	--	100[15]

Parameter	Units	Effluent Limitation			Monitoring Data (May 2014 – April 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

ND = Non-Detect

1 Applied as an average dry weather flow effluent limitation.

2 Represents the maximum observed daily discharge.

3 Based on an average dry weather discharge flow of 3.4 MGD.

4 Represents the minimum reported percent removal.

5 In the cover letter submitted with the October 2016 eSMR, the Discharger indicated that the ammonia result of 3.7 mg/L from 4 October 2016 was the result of an unknown source of toxicity, which impacted the biology and reduced the ammonia removal efficiency within the secondary treatment system.

6 Applied as a 4-day average effluent limitation.

7 Applied as a 1-hour average effluent limitation.

8 Average Monthly Effluent Limitation

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

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

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

9 Maximum Daily Effluent Limitation

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

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

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

10 Applied as a 7-day median effluent limitation.

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

12 Applied as a daily maximum effluent limitation.

13 Minimum percent survival for any one bioassay.

14 Median percent survival of three consecutive acute bioassays.

15 Represents the minimum observed percent survival.

D. Compliance Summary

The Central Valley Water Board issued Administrative and Civil Liability (ACL) Complaint R5-2017-0057 on 5 January 2018, which proposed to asses a civil liability of $6,000 against the Discharger for effluent violations for chlorodibromomethane and chlorine residual that occurred from the period 2 June 2015 through 10 November 2015 under Order R5-2013-0043. The Discharger paid the mandatory minimum penalty of $6,000.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of chapter 3 of CEQA, (commencing with section 21100) of division 13 of the Public Resources Code. The adoption of land discharge specifications for the emergency storage ponds, recycling specifications, and groundwater limitations constitute permitting of an existing facility that is categorically exempt from the provisions of CEQA pursuant to California Code of Regulations, title 14, section 15301.

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, Fourth Edition (*Revised July 2016*),* for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. 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 (MUN). 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 (from Shasta Dam to Colusa Basin Drain)	Existing: Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial service supply (IND); hydropower generation (POW); contact water recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm and cold spawning, reproduction, and/or early development (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, which 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 Antidegradation Policy). The State Antidegradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Antidegradation Policy requires that existing water quality be maintained unless degradation is justified based on specific findings. The 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 Antidegradation Policy. The Central Valley Water 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 (MCL's) 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 (RPA) based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or

contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

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

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 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).

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 (WQLS's). The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011, U.S. EPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of WQLS's, 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* [WQLS's]*. 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).** Table F-4, below, identifies the 303(d) listings and any applicable TMDL's. At the time of this permit renewal, there are no approved TMDL's with waste load allocations (WLA's) that apply to this Facility.

Table F-4. 303(d) List for the Sacramento River (Keswick Dam to Cottonwood Creek)

Pollutant	Potential Sources	TMDL Status
Unknown Toxicity	Source Unknown	Planned for Completion (2019)

In 2007, the Central Valley Water Board adopted an amendment to the Basin Plan that addressed impairments within the Sacramento River and Feather River Basins by promulgating a water quality objective for diazinon and chlorpyrifos as well as an implementation program designed to ensure compliance with the new water quality objective. Per this implementation program, all NPDES permits for discharges (both direct and indirect) to the Sacramento and Feather Rivers must contain an effluent limit equivalent to the diazinon and chlorpyrifos water quality objective. This Order requires the Discharger to monitor the effluent for diazinon and chlorpyrifos on an annual basis

and includes water quality-based effluent limitations (WQBEL's) that are consistent with the applicable diazinon and chlorpyrifos water quality objective.

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 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, 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;

   a. The WDR's are consistent with water quality objectives; and

   b. 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*," which 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. section 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the MCL's*" 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 MCL's. 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 40 C.F.R. 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 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 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 CCR, Title 22, section 66261.1 et seq., which prohibits discharge of hazardous waste.

6. **Prohibition III.F (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 R5-2013-0043 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.

7. Order R5-2013-0043 prohibited the discharge of waste that causes further degradation or pollution where any numeric or narrative water quality objective contained in the Basin Plan is already being violated. The effluent limitations implemented in this Order are protective of the applicable Basin Plan water quality objectives. This Order does not allow for an increase in flow or mass of pollutants which are already exceeding objectives in the receiving water. Therefore, the prohibition has not been retained in this Order.

8. Order R5-2013-0043 included a prohibition specifying that the Discharger shall not cause pollution as defined in Water Code section 13050. Water Code section 13050 defines pollution as the alteration of quality of waters of the state by waste to a degree which unreasonably affects the waters for beneficial uses or facilities which serve these beneficial uses. This Order includes effluent and receiving water limitations necessary to protect the beneficial uses of the receiving water. Therefore, this prohibition has not been retained in this 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 (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 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 BOD_5 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 BOD_5 and TSS over each calendar month. This Order requires WQBEL's that are equal to or more stringent than the secondary technology-based treatment described in 40 C.F.R. part 133 (see section IV.C.3.d of the Fact Sheet for a discussion on WQBEL's for BOD_5 and TSS).

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	30[1]	45[1]	--	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	6.0[1]	9.0[1]
Total Suspended Solids	mg/L	30[1]	45[1]	--	--	--
	% Removal	85	--	--	--	--

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

C. Water Quality-Based Effluent Limitations (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 technology equivalence requirements, 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 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 40 C.F.R. 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.

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 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for MUN.

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

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal regulations, 40 C.F.R. 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 section III.C.1 above for a complete description of the receiving water and beneficial uses.

b. **Effluent and Ambient Background Data.** The RPA, as described in section IV.C.3 of this Fact Sheet, was based on data from May 2014 through April 2017, which includes effluent and ambient background data submitted in SMR's. Consistent with Order R5-2013-0043, the RPA's for copper and zinc utilize receiving water dissolved concentrations.

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 zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the 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 and Facility Effluent Flows.** Upstream of the discharge, flows in the Sacramento River are largely dependent on releases from upstream reservoirs. The reservoirs are operated such that minimum receiving water flows may occur during peak wet weather effluent flows at the Facility. Critical flow-based dilution ratios (once the receiving water and effluent become fully mixed downstream) were provided by the Discharger in the September 2010 Mixing Zone/Dilution Study Report (2010 Study) and are presented below (the appropriate distances downstream where complete mixing occurs for each criterion were not provided). The discharge is not a completely mixed discharge, as defined by the SIP.

Table F-6. Critical Flow-Based Dilution Ratios

Criterion	Critical Receiving Water Flow (cfs)	Effluent Flow (MGD)	Dilution Ratio (Completely Mixed)
Acute	3,298[1]	12[2]	178:1
Chronic	3,299[3]	11[4]	194:1
Human Health	6,994[5]	3.6[6]	1,256:1

Criterion	Critical Receiving Water Flow (cfs)	Effluent Flow (MGD)	Dilution Ratio (Completely Mixed)

1 Represents the lowest 1-day flow with an average reoccurrence frequency of once in 10 years (1Q10).
2 Represents the maximum daily flow.
3 Represents the lowest average 7 consecutive day flow with an average reoccurrence frequency of once in 10 years (7Q10).
4 Represents the 4-day average of daily maximum flows.
5 Represents the harmonic mean river flow.
6 Represents the long-term arithmetic mean flow.

iii. **Diffuser Configuration.** The Facility's effluent outfall multi-port diffuser extends under the surface water approximately 220 feet south from the north bank of the Sacramento River. The river channel width at the outfall location is not less than 438 feet at any receiving water flow level. The diffuser has 20 diffuser ports; however, by design, only the last 10 diffuser ports (ports 11-20) are open. The ports consist of 6-inch rubber risers with 4-inch flapped openings that are submerged at approximately 1 foot below the river surface during low receiving water flow conditions. The width of the outfall between ports 11 and 20 is 36 feet.

iv. **Dilution/Mixing Zone Study Results.** The 2010 Study included computer modeling of the Facility's diffuser discharge using U.S. EPA-developed models (Visual Plumes and CORMIX) and a dye tracer study of actual discharge conducted by injecting fluorescent dye into the effluent under close-to-worst-case receiving water conditions (low flows) and measuring the dye concentrations around and downstream of the diffuser. Due to complex channel configuration and gravel bars located within the vicinity of the diffuser, the 2010 Study recommended the following sources (i.e., model or dye-data) of results for the various criteria:

(a) Visual Plumes for the near-field (acute) mixing, because this model most accurately represents jet plume mixing from multiple ports.

(b) Dye study results, linearly extrapolated to critical conditions for the far-field (chronic) mixing, because the dye study most accurately reflects actual channel conditions under shallow low receiving water conditions.

(c) CORMIX for far-field human health-based conditions, because under high receiving water flows, the river channel more closely resembles an ideal schematized channel.

The results of the 2010 Study are summarized in Table F-7, below:

Table F-7. Mixing Zone/Dilution Study Results

Distance Downstream (Feet)	Dilution Factor		
	Acute[1]	Chronic[2]	Human Health[3]
1	2	--	--
2	3	--	--
3	4	--	--
4	5	--	--
5	5	--	--
30	5	6	137
45	--	3[4]	147

Distance Downstream (Feet)	Dilution Factor		
	Acute[1]	Chronic[2]	Human Health[3]
100	--	10	176
300	--	16	249
500	--	18	306
700	--	22	355
1,000	--	26	--
1,200	--	26	453

1 Obtained using Visual Plumes.
2 Obtained using extrapolated dye study results.
3 Obtained using CORMIX.
4 Value designated as outlier in study.

v. **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 water quality criteria for copper, cyanide, and zinc. The Discharger has also requested a chronic aquatic life mixing zone for pH. An acute aquatic life dilution credit of 16, corresponding to a mixing zone of 282 feet, and a chronic aquatic life dilution credit of 14, corresponding to a mixing zone of 230 feet, are allowed in this Order.

The acute and chronic aquatic life mixing zones of 282 feet and 230 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 width of the Sacramento River at the diffuser is approximately 438 feet at the surface. The chronic aquatic life mixing zone of 230 feet is 36 feet wide near the diffuser outfall and is estimated to be less than 150 feet wide at the furthest downstream edge of the mixing zone. The aquatic life mixing zone would 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 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 ensure that there will not be lethality to passing organisms. The acute mixing zone extends 282 feet downstream of the

[1] TSD, pg. 33

outfall. The float time at critical low receiving water flow conditions is approximately 3.7 minutes.[1] Furthermore, this Order includes acute toxicity effluent limitations that require compliance to be determined based on acute bioassays using 100 percent effluent. Compliance with these requirements ensures that acute toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger's 2010 Study evaluated 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 results of the 2010 Study indicate there is an adequate zone of passage for aquatic life that is at least 75 percent of the width (approximately 330 feet) 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, allow adequate zones 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.

(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 downstream of the City of Anderson's wastewater treatment plant effluent outfall diffuser; however, the proposed mixing zones do not overlap with the mixing zones from the upstream 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.

vi. **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*

[1] Assuming uniform flow across a rectangular cross-section (438 feet wide by 6 feet depth) to obtain velocity at critical low flow conditions (3,298 cfs). [Average depth of 6 feet provided in 2010 Study]

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. A mixing zone for human health carcinogens has been allowed in this Order for the development of WQBEL's for chlorodibromomethane, dichlorobromomethane, and nitrate plus nitrite.

A human health dilution credit of 92, corresponding to a mixing zone length of 20 feet, 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*."[1] The human health mixing zone is not applicable to aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire waterbody.

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

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

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

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

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls.

(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

[1] TSD, pg. 33

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.

vii. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation).** As discussed in section IV.C.3 of this Fact Sheet, based on existing effluent data, it appears the Facility cannot meet the end-of-pipe (no dilution) WQBEL's for pH, chlorodibromomethane, copper, cyanide, dichlorobromomethane, zinc, and nitrate plus nitrite.

The allowance of a mixing zone and dilution credits is a discretionary act by the Central Valley Water Board. When determining the appropriate dilution credits for a specific pollutant, several factors must be considered, such as available assimilative capacity, Facility performance, and best practicable treatment or control. The Central Valley Water Board has determined the allowable dilution credits on a constituent-by-constituent basis.

The receiving water contains assimilative capacity for chlorodibromomethane, copper, cyanide, dichlorobromomethane, zinc, and nitrate plus nitrite. As discussed above, acute, chronic and human health mixing zones with associated dilution credits of 16, 14, and 92, respectively, meet the mixing zone conditions specified in section 1.4.2.2.A of the SIP. However, an overarching mixing zone condition is that "A mixing zone shall be as small as practicable.", and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*"

The Central Valley Water Board considered Facility performance and the receiving water's assimilative capacity for each individual pollutant in determining the dilution needed. The consideration of these factors is necessary to avoid allocating an unnecessarily large portion of the receiving water's assimilative capacity for each pollutant and possibly violating the Antidegradation Policy. Based on Facility performance, the full dilution credits, as discussed above, are not needed for chlorodibromomethane, cyanide, dichlorobromomethane, and nitrate plus nitrite and have been reduced to ensure compliance with the mixing zone provisions of the SIP. Based on Facility performance for copper, this Order maintains the dilution credits allowed in Order R5-2013-0043, which includes the maximum chronic aquatic life dilution credit of 14. Based on Facility performance for zinc, this Order utilizes the maximum acute aquatic life dilution credit of 16.

Table F-8. Dilution Credits Associated with Performance-based Effluent Limitations

Pollutant	Units	ECA	Criterion	Background	Dilution Credit[1]
Chlorodibromomethane	µg/L	9.2	0.41	<0.06	25 (HH)
Copper, Total Recoverable	µg/L	54 (Basin Plan) 37 (chronic)	8.2 (Basin Plan) 5.9 (chronic)	3.6	10 (Basin Plan) 14 (chronic)
Cyanide, Total (as CN)	µg/L	28 (Basin Plan) 26 (chronic)	10 (Basin Plan) 5 (chronic)	<1	2 (Basin Plan) 5 (chronic)
Dichlorobromomethane	µg/L	43	0.56	0.1	92 (HH)
Zinc, Total Recoverable	µg/L	299 (Basin Plan) 204 (chronic)	22 (Basin Plan) 76 (chronic)	4.7	16 (Basin Plan) 1.8 (chronic)
Nitrate Plus Nitrite	µg/L	45	10	0.14	3.5 (HH)

Pollutant	Units	ECA	Criterion	Background	Dilution Credit[1]

[1] The dilution credit is calculated using the steady-state mass balance equation rearranged to solve for the dilution credit, as follows:
D = (ECA – C) / (C – B)

The revised mixing zones and dilution credits for chlorodibromomethane, copper, cyanide, dichlorobromomethane, zinc, and nitrate plus nitrite will result in a minor increase in the discharge (i.e., use of less than 10 percent of the available assimilative capacity for these constituents in the receiving water). According to U.S. EPA's memorandum on Tier 2 Antidegradation Reviews and Significance Thresholds, any individual decision to lower water quality for non-bioaccumulative chemicals that is limited to 10 percent of the available assimilative capacity represents minimal risk to the receiving water and is fully consistent with the objectives and goals of the Clean Water Act. The mixing zones are as small as practicable for this Facility, and the increased loading complies with the State and federal Antidegradation requirements.

viii. **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 study conducted by the Discharger, the Central Valley Water Board has determined that these factors are met.

(b) Section 1.4.2.2. of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone study conducted by the Discharger, the Central Valley Water Board has determined the mixing 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 BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

(f) As required by the SIP, in determining the extent of or whether to allow 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 chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pH, and zinc. 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 chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pH, and zinc 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.

Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pH, and zinc, 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.

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc, which are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. 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. The U.S. EPA conversion factors were also used to convert the receiving water dissolved copper and zinc concentrations to total recoverable concentrations for the purpose of establishing WQBEL's for copper and zinc.

e. **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 SIP[1] and the CTR.[2] 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 zones.[3] Design flows for aquatic life criteria include the 1Q10 and the 7Q10.[4] 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 3-year period, on average.[5] 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.[6] 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 comply with the CTR and SIP.

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

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. § 131.38(c)(4)).

[3] 40 C.F.R. §131.3(c)(4)(ii)

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

[5] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

[6] 40 C.F.R. §131.38(c)(2)(i)

i. **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 37 mg/L to 58 mg/L based on collected ambient data from May 2014 through April 2017. 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 37 mg/L (minimum) up to 58 mg/L (maximum). Staff recommends that the Central Valley Water Board use the ambient hardness values shown in Table F-9 for the following reasons.

(a) Using the ambient receiving water hardness values shown in Table F-9 will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.

(b) 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, Central Valley Water Board staff has used the ambient hardness values shown in Table F-9 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.

(c) Using an ambient hardness that is higher than the minimum of 37 mg/L will result in limits that may allow increased metals to be discharged to the Sacramento 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 WDR's that will 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 the maximum benefit to the people of the state will be maintained.

(d) Using the ambient hardness values shown in Table F-9 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]	CTR Criteria (µg/L)[1]	
		Acute	Chronic
Copper, Total Recoverable	58	8.4	5.9
Chromium III, Total Recoverable	58	1,100	130

CTR Metals	Ambient Hardness (mg/L)[2]	CTR Criteria (µg/L)[1]	
		Acute	Chronic
Cadmium, Total Recoverable	58	2.4	1.6
Lead, Total Recoverable	58	41	1.6
Nickel, Total Recoverable	58	300	33
Silver, Total Recoverable	58	1.6	--
Zinc, Total Recoverable	58	76	76

[1] Metal criteria rounded to two significant figures in accordance with the CTR (40 C.F.R. section 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.

ii. **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:

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

Where:

H = ambient hardness (as $CaCO_3$) [1]

WER = water-effect ratio

m, b = metal- and criterion-specific constants

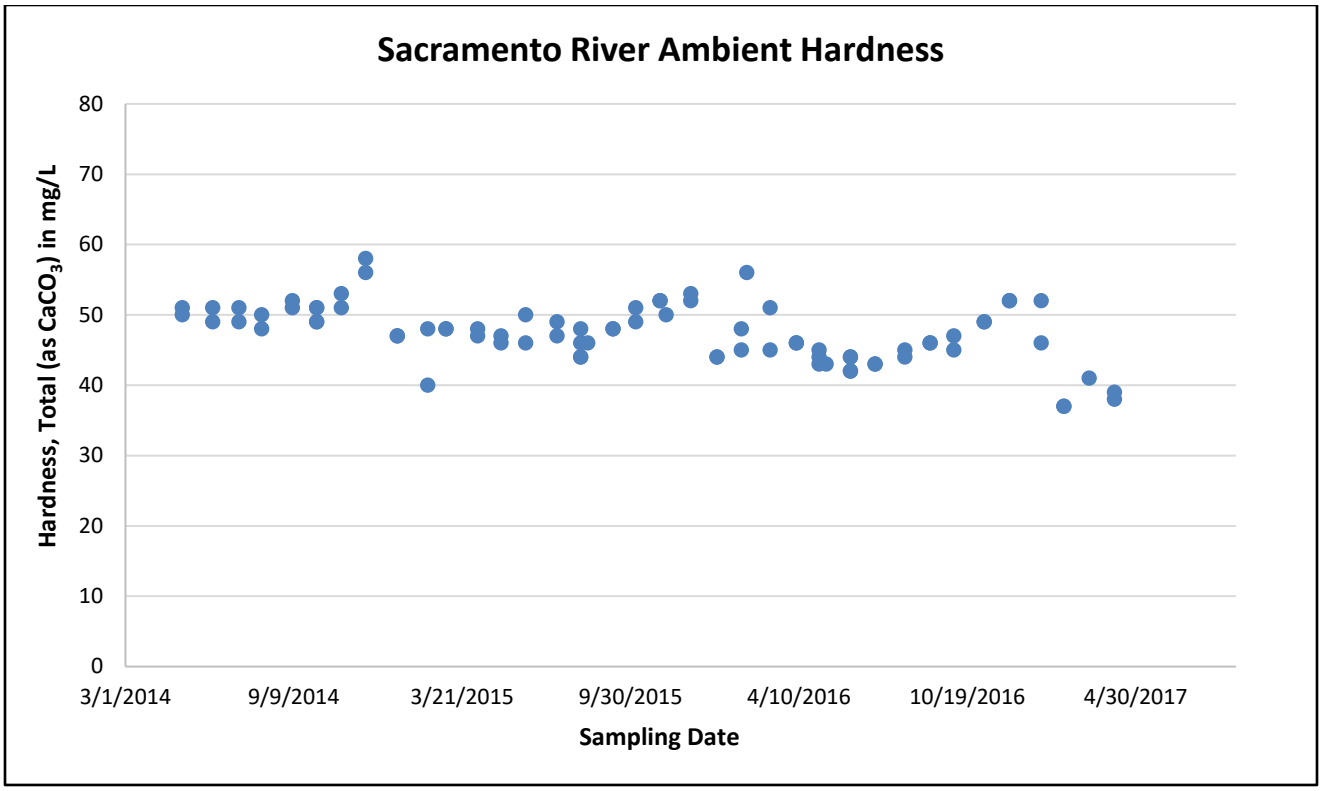
The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a 3-year period.[2] Design flows for aquatic life criteria include the 1Q10 and the 7Q10. The 1Q10 and 7Q10 Sacramento River flows are 3,298 cfs and 3,299 cfs, respectively.

[1] For this discussion, all hardness values are expressed in mg/L as $CaCO_3$.
[2] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

iii. **Ambient Conditions**

The ambient receiving water hardness varied from 37 mg/L to 58 mg/L based on 82 samples from May 2014 through April 2017 (see Figure F-1).

Figure F-1. Observed Ambient Hardness Concentrations 37 mg/L – 58 mg/L



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-1 were considered to determine the appropriate ambient hardness to calculate the CTR criteria and effluent limitations that are protective under all discharge conditions.

iv. **Approach to Derivation of Criteria**

As shown above, ambient hardness is 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 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:

(a) "Low receiving water flow." CTR design discharge conditions (1Q10 and 7Q10) have been selected to represent reasonable worst case receiving water flow conditions.

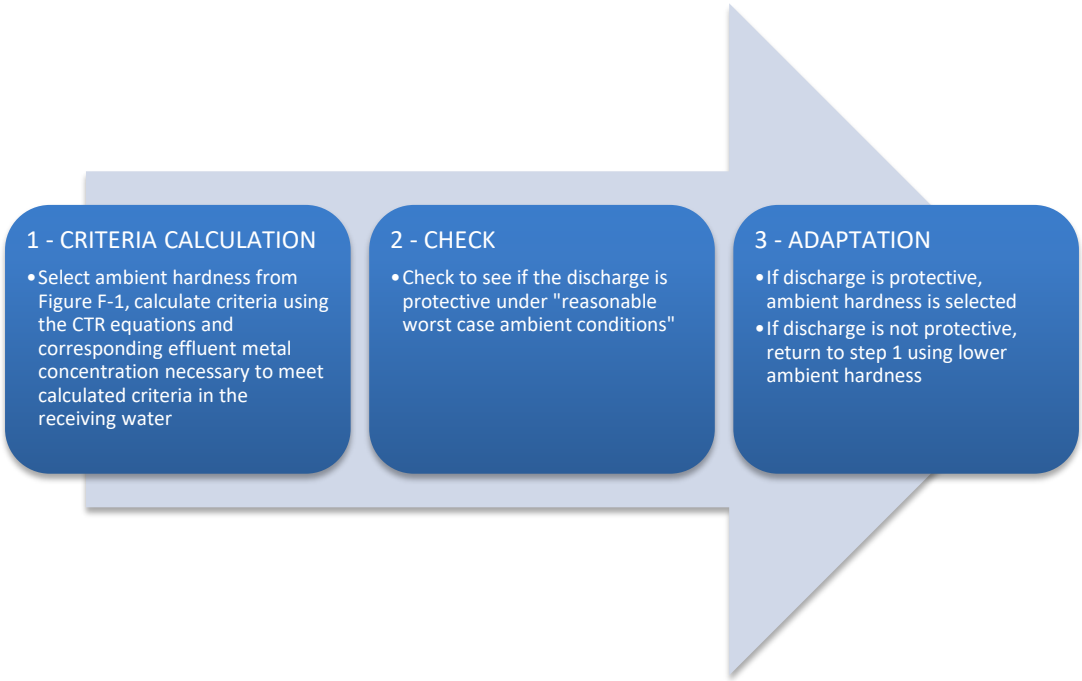
(b) "High receiving water flow (maximum receiving water flow)." This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.

(c) "Low receiving water hardness." The minimum receiving water hardness condition of 37 mg/L was selected to represent the reasonable worst case receiving water hardness.

(d) "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.

Iterative approach. An iterative analysis has been used to select the ambient hardness to calculate the criteria that will result in effluent limitations that protect beneficial uses under all flow conditions.

The iterative approach is summarized in the following algorithm and described below in more detail.



(a) CRITERIA CALCULATION. CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 58 mg/L. Effluent metal concentrations necessary to meet the above calculated CTR criteria in the receiving water are calculated in accordance with the SIP.[1] This should not be confused with an effluent limit. Rather, it is the Effluent Concentration Allowance (ECA), which is synonymous with the WLA defined by U.S. EPA as "*a definition of effluent water quality that is necessary to meet the water quality standards in the receiving water*."[2] If effluent limits are found to be needed, the limits are calculated to enforce the ECA considering effluent variability and the probability basis of the limit.

(b) CHECK. U.S. EPA's simple mass balance equation[3] is used to evaluate if discharge at the computed ECA is protective. Resultant downstream metal concentrations are compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.

(c) ADAPT. If step b results in:

(1) Receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.

(2) Receiving water metal concentration greater than CTR criteria, then return to step a, selecting a lower ambient hardness value.

The CTR's hardness-dependent metals criteria equations contain metal-specific constants, so the criteria vary depending on the metal. Therefore, steps a through c must be repeated separately for each metal until ambient hardness values are determined that will result in criteria and effluent limitations that comply with the CTR and protect beneficial uses for all metals.

v. **Results of Iterative Analysis**

The above iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-9, above. Using these hardness values to calculate criteria, which are actual sample results collected in the receiving water, will result in effluent limitations that are protective under all ambient flow conditions. Copper 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 copper and silver. As shown in the example tables, an ambient hardness value of 58 mg/L is used in the CTR equations to derive criteria and effluent limitations. 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 ambient hardness values selected using the three-step iterative process results in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-10 and F-11 below, summarize the critical flow

[1] SIP section 1.4.B, Step 2, provides direction for calculating the Effluent Concentration Allowance.
[2] U.S. EPA Technical Support Document for Water Quality-based Toxics Control (TSD), pg. 96.
[3] U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010, pg. 6-24)

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 Copper

Receiving water hardness used to compute effluent limitations				58 mg/L
Effluent Concentration Allowance (ECA) for Copper[1]				5.9 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration[2] (µg/L)	
1Q10	37.1	4.0	4.0	**Yes**
7Q10	37.1	4.0	4.0	**Yes**
Max receiving water flow	37.0	4.0	4.0	**Yes**

1 The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water.

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

Receiving water hardness used to compute effluent limitations				58 mg/L
Effluent Concentration Allowance (ECA) for Silver[1]				1.6 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Silver Concentration[2] (µg/L)	
1Q10	37.1	0.74	0.74	**Yes**
7Q10	37.1	0.74	0.74	**Yes**
Max receiving water flow	37.0	0.73	0.73	**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.

3. Determining the Need for WQBEL's

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*." The process to determine whether a WQBEL is required is referred to as an 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 U.S. EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

a. **Constituents with Total Maximum Daily Loads (TMDL's).** The Central Valley Water Board developed WQBEL's for diazinon and chlorpyrifos that have available WLA's under a TMDL. The Central Valley Water Board developed WQBEL's for diazinon and chlorpyrifos pursuant to 40 C.F.R. section 122.44(d)(1)(vii), which does not require or contemplate an RPA.

i. **Diazinon and Chlorpyrifos**

(a) **WQO.** The Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers and amended the Basin Plan to include diazinon and chlorpyrifos WLA's 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 modified Basin Plan Chapter III (Water Quality Objectives) to establish site-specific numeric objectives for diazinon and chorpyrifos in the Sacramento and Feather Rivers and identified the requirements to meet the additive formula already in Basin Plan Chapter IV (Implementation) for the additive toxicity of diazinon and chlorpyrifos.

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

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

Where:

C_D = diazinon concentration in µg/L of point source discharge for WLA…
C_C = chlorpyrifos concentration in µg/L of point source discharge for the WLA…
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."

The water quality objectives for chlorpyrifos are 0.025 µg/L as a 1-hour average (acute) and 0.015 µg/L as a 4-day average (chronic), not to be exceeded more than once in a 3-year period. The water quality objectives for diazinon are 0.16 µg/L as a 1-hour average (acute) and 0.10 µg/L as a 4-day average (chronic), not to be exceeded more than once in a 3-year period.

(b) **RPA Results.** Diazinon was not detected in the effluent based on six samples collected between May 2014 and April 2017. Diazinon was not detected in the upstream receiving water based on four samples collected between May 2014 and April 2017.

Chlorpyrifos was not detected in the effluent based on five samples collected between May 2014 and April 2017. Chlorpyrifos was not detected in the upstream receiving water based on four samples collected between May 2014 and April 2017.

Although diazinon and chlorpyrifos were not detected in the effluent or the upstream 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.

(c) **WQBEL's.** WQBEL's for diazinon and chlopyrifos 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)

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

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

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

(2) Average Weekly Effluent Limitation (AWEL)

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

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

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

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

b. **Constituents with No Reasonable Potential.** WQBEL's are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an in-stream 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. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCL's, 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 National Ambient Water Quality Criteria (NAWQC) 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. The Central Valley Water Board is currently implementing the CV SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort, the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV SALTS.

Table F-12. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[2]	U.S. EPA NAWQC	Effluent	
				Average[3]	Max
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	77	77.2
Electrical Conductivity (µmhos/cm) or Total Dissolved Solids (mg/L)	Varies	900, 1,600, 2,200 or 500, 1,000, 1,500	N/A	486 or 346	659 or 410
Sulfate (mg/L)	Varies	250, 500, 600	N/A	27	28.7

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, chapter IV, section 8 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 MCL's 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 electrical conductivity is 900 µmhos/cm as a recommended level, 1,600 µmhos/cm as an upper level, and 2,200 µmhos/cm as a short-term maximum, or when expressed as total dissolved solids is

500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum.

The Basin Plan contains a site-specific EC limit for the Sacramento River as follows: Electrical conductivity (at 25°C) shall not exceed 230 µmhos/cm (50 percentile) or 235 µmhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain or 240 µmhos/cm (50 percentile) or 340 µmhos/cm (90 percentile) at I Street Bridge, based upon previous 10 years of record.

(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 41.7 mg/L to 77.2 mg/L, with a maximum annual average of 77 mg/L based on eight samples collected between May 2014 and April 2017. The maximum annual average does not exceed the Secondary MCL recommended level and the maximum effluent chloride concentration of 77.2 mg/L does not exceed the NAWQC criteria for the protection of freshwater aquatic life. The maximum observed receiving water chloride concentration was 4.1 mg/L based on eight samples collected between May 2014 and April 2017.

(2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows a maximum observed annual average electrical conductivity of 486 µmhos/cm, with a range from 185 µmhos/cm to 659 µmhos/cm. The receiving water has been consistently in compliance with the Basin Plan site-specific electrical conductivity objectives for the Sacramento River above Knights Landing (the maximum observed annual average upstream electrical conductivity was 123 µmhos/cm) resulting in available assimilative capacity for consideration in the RPA. Utilizing a conservative mass balance approach where the receiving water flow is equal to 6,994 cfs (harmonic mean), the effluent flow is equal to 14.4 MGD (peak wet weather capacity), the receiving water electrical conductivity concentration is 161 µmhos/cm (maximum recorded), and the effluent electrical conductivity concentration is 659 µmhos/cm (maximum recorded), the resulting downstream electrical conductivity concentration is 163 µmhos/cm. Considering the large dilution and assimilative capacity in the receiving water, the small increase in electrical conductivity caused by the discharge does not result in a reasonable potential to cause or contribute to an exceedance of the objectives for electrical conductivity in the receiving water. These levels do not exceed the Secondary MCL recommended level. The maximum observed receiving water electrical conductivity was 160.6 µmhos/cm based on 153 samples collected from May 2014 through April 2017.

Total dissolved solids concentrations in the effluent ranged from 145 mg/L to 410 mg/L, with a maximum annual average of 346 mg/L based on 40 samples collected from May 2014 through April 2017. These levels do not exceed the Secondary MCL recommended level.

The maximum observed receiving water total dissolved solids concentration was 108 mg/L based on four samples collected from May 2014 through April 2017.

(3) **Sulfate.** Sulfate concentrations in the effluent ranged from 20 mg/L to 28.7 mg/L, with a maximum annual average of 27 mg/L, based on four samples collected from May 2014 through April 2017. These levels do not exceed the Secondary MCL recommended level. The maximum observed receiving water sulfate concentration was 8.18 mg/L based on four samples collected from May 2014 through April 2017.

Based on the relatively low levels of salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the 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 the Delta waterways. Allowing the Discharger to increase its current salt loading may be contrary to the Region-wide effort to address salinity in the Central Valley. In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to prepare and implement a salinity evaluation and minimization plan. Also, water supply monitoring is required to evaluate the relative contribution of salinity from the source water to the effluent.

ii. **Beta-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, total 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. In addition, the CTR contains a human health criterion for beta-BHC of 0.014 µg/L for freshwaters from which both water and organisms are consumed. Order R5-2013-0043 included effluent limitations for beta-BHC based on the CTR criterion.

(b) **RPA Results.** Beta-BHC was not detected in the effluent based on 41 samples collected from May 2014 through April 2017. Beta-BHC was not detected in the upstream receiving water based on five samples collected between May 2014 and April 2017. Therefore, beta-BHC in the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion or the Basin Plan objective, and the effluent limitations for beta-BHC have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iii. **Carbon Tetrachloride**

(a) **WQO.** The CTR includes a criterion of 0.25 µg/L for carbon tetrachloride for the protection of human health for waters from which both water and

organisms are consumed. Order R5-2013-0043 included effluent limitations for carbon tetrachloride based on the CTR criterion.

(b) **RPA Results.** The MEC for carbon tetrachloride was 0.13 µg/L based on 49 samples collected between May 2014 and April 2017. Carbon tetrachloride was not detected in the upstream receiving water based on five samples collected between May 2014 and April 2017. Therefore, carbon tetrachloride in the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health and the effluent limitations for carbon tetrachloride have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

c. **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. **4,4-DDE**

(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; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide non-detect (ND) objective has been interpreted to be equal to the lowest minimum level (ML) value for 4,4-DDE contained in Appendix 4 of the SIP (i.e., 0.05 µg/L) for the purpose of determining reasonable potential. In addition, the CTR contains a human health criterion for 4,4-DDE of 0.00059 µg/L for freshwaters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between May 2014 and April 2017, the MEC for 4,4-DDE exceeds the applicable Basin Plan objective and CTR criterion. 4,4-DDE was not detected in the upstream receiving water based on five samples collected from May 2014 through April 2017.

Table F-13. Data Summary for 4,4-DDE

Effluent				Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
MEC (µg/L)	No. of Samples	No. of ND	No. of DNQ				
0.012 (DNQ)	40	39	1	<0.003	0.0025	0.005	0.05

Section 2.4.2 of the SIP states that the ML is the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences.

(1) Required ML's are listed in Appendix 4 of the SIP. Where more than one ML is listed in Appendix 4, the Discharger may select any one of the cited analytical methods for compliance determination. The selected ML used for compliance determination is referred to as the reporting level (RL).

(2) An RL can be lower than the ML in Appendix 4 only when the Discharger agrees to use an RL that is lower than the ML listed in Appendix 4. The Central Valley Water Board and the Discharger have no agreement to use a RL lower than the listed ML.

(3) Section 1.2 of the SIP requires that the Regional Board use all available, valid, relevant, representative data and information, as determined by the Regional Board, to implement the SIP. Section 1.2 of the SIP further states that the Regional Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP.

(4) Data reported below the ML indicates the data may not be valid due to possible matrix interferences during the analytical procedure.

(5) Further, section 2.4.5 of the SIP (Compliance Determination) supports the insufficiency of data reported below the ML or RL. In part, it states, "*Dischargers shall be deemed out of compliance with an effluent limitation, for reporting and administrative enforcement purposes, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the RL.*" Thus, if submitted data is below the RL, that data cannot be used to determine compliance with effluent limitations.

(6) Data reported below the ML is not considered valid data for use in determining reasonable potential. Therefore, in accordance with section 1.2 of the SIP, the Central Valley Water Board has determined that data reported below the ML is inappropriate and insufficient to be used to determine reasonable potential.

(7) In implementing its discretion, the Central Valley Water Board is not finding that reasonable potential does not exist; rather the Central Valley Water Board cannot make such a determination given the invalid data. Therefore, the Central Valley Water Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP policy.

SIP Appendix 4 cites an ML of 0.05 µg/L for 4,4-DDE. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for 36 samples, including the estimated result that occurred on 11 September 2015. The Discharger used an analytical method that was more stringent than the SIP ML for three samples and less stringent than the SIP ML for one sample. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for 4,4-DDE is inappropriate and insufficient to determine reasonable potential under the SIP.

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 effluent limitations, monitoring for 4,4-DDE will be required quarterly during 2021 as part of the effluent and receiving water characterization. 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.

ii. **Dieldrin**

(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; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide ND objective has been interpreted to be equal to the lowest ML value for dieldrin contained in Appendix 4 of the SIP (i.e., 0.005 µg/L) for the purpose of determining reasonable potential. In addition, the CTR contains a numeric criterion for dieldrin of 0.00014 µg/L for freshwaters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between May 2014 and April 2017, the MEC for dieldrin exceeds the applicable Basin Plan objective and CTR criterion. Dieldrin was not detected in the upstream receiving water based on five samples collected from May 2014 through April 2017.

Table F-14. Data Summary for Dieldrin

Effluent				Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
MEC (µg/L)	No. of Samples	No. of ND	No. of DNQ				
0.0041 (DNQ)	40	39	1	<0.002	0.0021	0.005	0.01

Section 2.4.2 of the SIP states that the ML is the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences.

(1) Required ML's are listed in Appendix 4 of the SIP. Where more than one ML is listed in Appendix 4, the Discharger may select any one of the cited analytical methods for compliance determination. The selected ML used for compliance determination is referred to as the RL.

(2) An RL can be lower than the ML in Appendix 4 only when the Discharger agrees to use an RL that is lower than the ML listed in Appendix 4. The Central Valley Water Board and the Discharger have no agreement to use a RL lower than the listed ML.

(3) Section 1.2 of the SIP requires that the Regional Board use all available, valid, relevant, representative data and information, as determined by the Regional Board, to implement the SIP. Section 1.2 of the SIP further states that the Regional Board has the discretion to

consider if any data are inappropriate or insufficient for use in implementing the SIP.

(4) Data reported below the ML indicates the data may not be valid due to possible matrix interferences during the analytical procedure.

(5) Further, section 2.4.5 of the SIP (Compliance Determination) supports the insufficiency of data reported below the ML or RL. In part, it states, "*Dischargers shall be deemed out of compliance with an effluent limitation, for reporting and administrative enforcement purposes, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the RL.*" Thus, if submitted data is below the RL, that data cannot be used to determine compliance with effluent limitations.

(6) Data reported below the ML is not considered valid data for use in determining reasonable potential. Therefore, in accordance with section 1.2 of the SIP, the Central Valley Water Board has determined that data reported below the ML is inappropriate and insufficient to be used to determine reasonable potential.

(7) In implementing its discretion, the Central Valley Water Board is not finding that reasonable potential does not exist; rather the Central Valley Water Board cannot make such a determination given the invalid data. Therefore, the Central Valley Water Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP policy.

SIP Appendix 4 cites an ML of 0.01 µg/L for dieldrin. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for 31 samples. The Discharger used an analytical method that was more stringent than the SIP ML for two samples, including the estimated result that occurred on 9 July 2014, and less stringent than the SIP ML for seven samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for dieldrin is inappropriate and insufficient to determine reasonable potential under the SIP.

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 effluent limitations, monitoring for dieldrin will be required quarterly during 2021 as part of the effluent and receiving water characterization. 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.

iii. **Heptachlor**

(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; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable

concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide ND objective has been interpreted to be equal to the lowest ML value for heptachlor contained in Appendix 4 of the SIP (i.e., 0.01 µg/L) for the purpose of determining reasonable potential. In addition, the CTR contains a numeric criterion for heptachlor of 0.00021 µg/L for freshwaters from which both water and organisms are consumed.

(b) **RPA Results.** Heptachlor was detected in the effluent once out of 40 monitoring events between May 2014 and April 2017 at a concentration of 0.018 µg/L, which occurred on 4 August 2015. Heptachlor was not detected in the upstream receiving water based on five samples collected between May 2014 and April 2017.

Section 1.2 of the SIP requires that the Regional Water Board use all available, valid, relevant, representative data and information, as determined by the Regional Water Board, to implement the SIP. Section 1.2 of the SIP further states that the Central Valley Water Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP. Currently, the only registered use for heptachlor in the United States is for the control of fire ants in buried, pad-mounted electric power transformers and in underground cable television and telephone cable boxes. Due to the limited scope of registered uses within the United States and the fact that heptachlor was not detected in the remaining 39 samples, the 4 August 2015 result does not appear to be representative of the discharge. Therefore, the Central Valley Water Board finds that the 4 August 2015 result is inappropriate and insufficient for determining reasonable potential under the SIP.

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 effluent limitations, monitoring for heptachlor will be required quarterly during 2021 as part of the effluent and receiving water characterization. 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.

d. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, BOD_5, chlorine residual, chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pH, total coliform organisms, TSS, and 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.

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").[1] 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 (CVCWA) 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 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

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

recommended criteria for waters where salmonids and early life stages are present were used.

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

A chronic criterion was calculated for each day when paired pH and temperature data were measured using downstream receiving water data for pH and temperature. Rolling 30-day average criteria were calculated from downstream receiving water data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The resulting lowest 99.9% 30-day CCC is 0.67 mg/L (as N). The 4-day average concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 0.67 mg/L (as N), the 4-day average concentration that should not be exceeded is 1.68 mg/L (as N).

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

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require 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.** In the cover letter submitted with the October 2016 eSMR, the Discharger noted that on 4 October 2016, the Facility was affected by an unknown source of toxicity that impacted the biology of the secondary treatment system and reduced ammonia removal efficiency. The Central Valley Water Board has the discretion to consider if any data are inappropriate or insufficient for use in developing WQBEL's. Therefore, the Central Valley Water Board has determined that ammonia data recorded on 4 October 2016 is not representative of normal operating conditions and is therefore inappropriate to use in the calculation of WQBEL's. Effluent data from this day has not been used to calculate WQBEL's for ammonia.

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 LTA's 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 AMEL and the AWEL. The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. This Order contains a final AMEL and AWEL for ammonia of 0.62 mg/L and 1.4 mg/L, respectively, based on the NAWQC.

(d) **Plant Performance and Attainability.** Excluding the effluent ammonia reading recorded on 4 October 2016, the maximum concentration for ammonia observed in the effluent was 0.53 mg/L based on 68 samples

collected between May 2014 and April 2017, which is less than the applicable WQBEL's. The Facility is designed to provide advanced-secondary treatment and fully nitrify the wastewater. Therefore, the Central Valley Water Board finds that immediate compliance with the ammonia limits is feasible.

ii. **Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)**

(a) **WQO.** There are no applicable water quality objectives for BOD_5 and TSS in the receiving water. However, these compounds are oxygen-demanding substances that can reduce dissolved oxygen concentrations in the receiving water. The Basin Plan contains a water quality objective for the Sacramento River from Keswick Dam to Hamilton City for dissolved oxygen of 9.0 mg/L, from 1 June to 31 August, and 7.0 mg/L at all other times. Furthermore, the Basin Plan contains a water quality objective for suspended material that states, "*Water shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.*"

(b) **RPA Results.** The Facility provides advanced-secondary filtration, therefore, based on water quality data for the effluent, the discharge does not demonstrate reasonable potential to cause or contribute to the applicable water quality objectives. However, the Facility type may be used as information to aid in determining if a WQBEL is required. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The Discharger is a POTW that treats domestic wastewater. Domestic wastewater inherently contains BOD_5 and TSS. Unless properly treated, the discharge of BOD_5 and TSS can cause or contribute to the applicable water quality objectives in the receiving water.

(c) **WQBEL's.** There are no numeric water quality objectives that are available to calculate WQBEL's for BOD_5 and TSS. However, the Facility provides advanced-secondary treatment and the treatment process includes filtration. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The advanced-secondary treatment process removes BOD_5 and TSS and these compounds are used as indicators of the effectiveness of the treatment processes. Consequently, this Order includes effluent limits for BOD_5 and TSS that reflect the technical capability of the advanced-secondary (or tertiary) filtration process, protect the beneficial uses of the receiving water, and minimize degradation.

This Order contains AMEL's and AWEL's for BOD_5 and TSS of 10 mg/L and 15 mg/L, respectively, which is technically based on the capability of an advanced-secondary or tertiary system.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows the Facility can meet the WQBEL's for BOD_5 and TSS.

iii. **Chlorine Residual**

(a) **WQO.** U.S. EPA developed NAWQC for the 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 exists and effluent limits are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require 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 TSD contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to AMEL's and MDEL's 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, a 1-hour average 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.** The Discharger uses sulfur dioxide to dechlorinate the effluent prior to discharge to the Sacramento River. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. **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 8.93 µg/L based on 49 samples collected between May 2014 and April 2017. Chlorodibromomethane was not detected in the upstream receiving water based on five samples collected between May 2014 and April 2017. 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) **WQBEL's.** The receiving water contains assimilative capacity for chlorodibromomethane, therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 25:1 is allowed in the development of WQBEL's for chlorodibromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 9.2 µg/L and an MDEL of 24 µg/L for chlorodibromomethane.

(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 chlorodibromomethane is feasible.

v. **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 criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA 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 8.4 µg/L and 5.9 µg/L, respectively, as total recoverable. As dissolved concentrations, the applicable acute and chronic criteria for copper in the receiving water are 8.0 µg/L and 5.6 µg/L, respectively. Order R5-2013-0043 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 U.S. EPA 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 copper in the effluent is 8.2 µg/L, as total recoverable, and 7.9 µg/L, as a dissolved concentration.

(b) **RPA Results.** The MEC for total recoverable copper in the effluent was 21.2 µg/L based on 44 samples collected between May 2014 and April 2017. The maximum observed upstream receiving water total recoverable copper concentration was 7.1 µg/L based on 43 samples collected between May 2014 and April 2017.

The MEC for dissolved copper in the effluent was 20.1 µg/L based on 37 samples collected between May 2014 and April 2017. The maximum observed upstream receiving water dissolved copper concentration was 3.5 µg/L based on 39 samples collected between May 2014 and April 2017.

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) **WQBEL's.** The receiving water contains assimilative capacity for copper, therefore, as discussed in section IV.C.2.c, an acute aquatic life dilution credit of 10:1 and a chronic aquatic life dilution credit of 14:1 were allowed in the development of WQBEL's for copper. Based on the allowable dilution credits, this Order contains an AMEL of 33 µg/L and an MDEL of 52 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.

vi. **Cyanide**

(a) **WQO.** The CTR includes acute and chronic criteria of 22 µg/L and 5.2 µg/L, respectively, for cyanide for the protection of freshwater aquatic life. The Basin Plan contains a maximum concentration water quality objective of 10 µg/L for the Sacramento River from Keswick Dam to the I Street Bridge at City of Sacramento.

(b) **RPA Results.** The MEC for cyanide in the effluent was 5.6 µg/L based on 41 samples collected between May 2014 and April 2017. Cyanide was not detected in the upstream receiving water based on 41 samples collected between May 2014 and April 2017. Therefore, cyanide 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.

(c) **WQBEL's.** The receiving water contains assimilative capacity for cyanide, therefore, as discussed in section IV.C.2.c, an acute aquatic life dilution credit of 2:1 and a chronic aquatic life dilution credit of 5:1 were allowed in the development of WQBEL's for cyanide. Based on the allowable dilution credits, this Order contains an AMEL of 14 µg/L and an MDEL of 28 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 cyanide is feasible.

vii. **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 24.3 µg/L based on 49 samples collected between May 2014 and April 2017. The maximum observed upstream receiving water concentration for dichlorobromomethane was 0.10 µg/L based on five samples collected between May 2014 and April 2017. 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) **WQBEL's.** The receiving water contains assimilative capacity for dichlorobromomethane, therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 92:1 is allowed in the development of WQBEL's for dichlorobromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 43 µg/L and an MDEL of 89 µg/L for dichlorobromomethane.

(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 dichlorobromomethane is feasible.

viii. **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 mg/L and 10 mg/L (as N), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite (as N).

U.S. EPA has developed a Primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as a 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 are 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 threaten 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) require 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. The Discharger currently uses nitrification/denitrification to remove ammonia, nitrite, and nitrate from the waste stream. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan's narrative chemical constituents objective. Although the Discharger denitrifies the discharge, inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBEL's are required.

(c) **WQBEL's.** The receiving water contains assimilative capacity for nitrate plus nitrite, therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 3.5:1 was allowed in the development of the WQBEL's for nitrate plus nitrite. Based on the allowable dilution credit, this Order contains an AMEL and AWEL for nitrate plus nitrite of 45 mg/L and 68 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 MUN beneficial use.

(d) **Plant Performance and Attainability.** The maximum observed concentration for nitrate plus nitrite in the effluent was 29.1 mg/L based on 40 samples collected between May 2014 and April 2017, which is below the WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ix. **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.** The beneficial uses of the Sacramento River include MUN, agricultural irrigation, and body contact water recreation. Based on a review of data submitted by the Discharger, the Sacramento River flow to design effluent flow is always greater than 20:1. Therefore, the DDW requirements for total coliform organisms 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 and 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.

(d) **Plant Performance and Attainability.** Analysis of the total coliform effluent data shows that immediate compliance with these effluent limitations is feasible.

x. **pH**

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

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

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

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*." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Based on 1,956 samples taken from May 2014 to April 2017, the maximum pH reported was 10.7 and the minimum was 4.5. The Facility exceeded the instantaneous maximum effluent limitation 15 times and the instantaneous minimum effluent limitation 15 times from May 2014 to April 2017. Although the Discharger has proper pH controls in place, the pH of the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBEL's for pH are required in this Order.

(c) **WQBEL's.** The Discharger utilized a water quality monitoring software package (*WaterPro!*) to determine the dilution necessary for the effluent to not reduce the receiving water pH to less than 6.5 standard units. The model input for background receiving water pH was conservatively valued at the minimum observed upstream pH value of 6.59 standard units. The effluent pH was varied to determine what minimum effluent pH value is necessary to maintain a minimum pH of 6.5 at the edge of the 200-foot mixing zone. The model output was a minimum effluent pH of 6.0 as the necessary pH to maintain a minimum receiving water pH of 6.5 standard units at the edge of the mixing zone. As discussed in section IV.C.2.c of

this Fact Sheet, an allowance for a pH mixing zone may be granted. The applicable dilution credit for pH is 13:1. Therefore, effluent limitations for pH of 6.0 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on the protection of the Basin Plan objectives.

(d) **Plant Performance and Attainability.** Analysis of effluent pH data shows that immediate compliance with the WQBEL's is feasible.

xi. **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. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA 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 zinc in the effluent are both 76 µg/L, as total recoverable. As dissolved concentrations, the applicable acute and chronic criteria for zinc in the receiving water are both 74 µg/L. Order R5-2013-0043 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 U.S. EPA 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 22 µg/L, as total recoverable, and 22 µg/L, as a dissolved concentration.

(b) **RPA Results.** The MEC for total recoverable zinc in the effluent was 115 µg/L based on 44 samples collected between May 2014 and April 2017. The maximum observed upstream receiving water total recoverable zinc concentration was 14.6 µg/L based on 43 samples collected between May 2014 and April 2017.

The MEC for dissolved zinc in the effluent was 114 µg/L based on 37 samples collected between May 2014 and April 2017. The maximum observed upstream receiving water total recoverable zinc concentration was 4.6 µg/L (as dissolved) based on 39 samples collected between May 2014 and April 2017. 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) **WQBEL's.** The receiving water contains assimilative capacity for zinc, therefore, as discussed in section IV.C.2.c, an acute aquatic life dilution credit of 16:1 and a chronic aquatic life dilution credit of 1.8:1 were allowed in the development of WQBEL's for zinc. Based on the allowable dilution credits, this Order contains an AMEL of 180 µg/L and an MDEL of 300 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, BOD_5, chlorine residual, chlorodibromomethane, chlorpyrifos, copper, cyanide, diazinon, dichlorobromomethane, nitrate plus nitrite, pH, total coliform organisms, TSS, and zinc. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.4.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:

ECA = C + D(C – B) *where C>B, and*
ECA = C *where C≤B*

where:

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

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples.

c. **Primary and Secondary MCL's.** 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 MDEL/AMEL multiplier 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 ECA's are converted to equivalent LTA's (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98^{th} 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	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--	--	--
pH	standard units	--	--	--	6.0	8.5
Total Suspended Solids	mg/L	10	15	--	--	--
Priority Pollutants						
Chlorodibromomethane	µg/L	9.2	--	24	--	--
Copper, Total Recoverable	µg/L	33	--	52	--	--
Cyanide, Total (as CN)	µg/L	14	--	28	--	--
Dichlorobromomethane	µg/L	43	--	89	--	--
Zinc, Total Recoverable	µg/L	180	--	300	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.62	1.4	--	--	--
	lbs/day[1]	18	40	--	--	--
Chorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--
Chlorpyrifos	µg/L	[4]	[5]	--	--	--
Diazinon	µg/L	[4]	[5]	--	--	--
Nitrate Plus Nitrite	mg/L	45	68	--	--	--
Total Coliform Organisms	MPN/100 mL	--	23[6]	240[7]	--	500

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Based on an average daily discharge flow of 3.4 MGD.

[2] Applied as a 4-day average effluent limitation.

[3] Applied as a 1-hour average effluent limitation.

[4] Average Monthly Effluent Limitation

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

$C_{D\,M-AVG}$ = average monthly diazinon effluent concentration in µg/L.

$C_{C\,M-AVG}$ = average monthly chlorpyrifos effluent concentration in µg/L.

[5] Average Weekly Effluent Limitation

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

$C_{D\,W-AVG}$ = average weekly diazinon effluent concentration in µg/L.

$C_{C\,W-AVG}$ = average weekly chlorpyrifos effluent concentration in µg/L.

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

[7] 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 WET testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (MRP) (Attachment E, section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

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

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute WET 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. 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. Therefore, 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.*" Consistent with Order R5-2013-0043, effluent limitations for acute toxicity have been included in this Order as follows:

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

Minimum for any one bioassay ---------- 70%
Median for any three consecutive bioassays ---------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00) Table F-16, below, includes chronic WET testing performed by the Discharger from May 2014 through April 2017. 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*		Water Flea *Ceriodaphnia dubia*		Green Algae *Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
9 September 2014	1	1	1	>1[1]	1
14 September 2015	1	1	1	1	1
7 November 2016	1	1	1	1[2]	1[3]

[1] Laboratory note that *C. dubia* reproduction TUc result >1, however lab's BPJ was that *C. dubia* reproduction TUc=1 based on TST results and review of Minimum Significant Difference.

[2] For *C. dubia* reproduction, lab reports indicate >1 TUc for lab water control comparison but 1 TUc for receiving water control comparison.

[3] For *S. capricornutum* growth, lab reports indicate 1 TUc with lab water control comparison but >1 TUc with receiving water control comparison.

i. **RPA.** A dilution ratio of 2:1 is available for chronic WET. Chronic toxicity testing results exceeding 2 chronic toxicity units (TUc) (as 100/NOEC) and a percent effect at 50 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 WET testing conducted between May 2014 and April 2017, the maximum chronic toxicity result was 1 TUc on 9 September 2014 with a percent effect of 18.8 percent. 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 CF.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 have been established in this Order for ammonia because it is an oxygen demanding substance. Except for this constituent, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (average dry weather flow) permitted in section III.G of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45 (d) requires AMEL's and AWEL's for POTW's unless demonstrated to be impracticable. For chlorodibromomethane, copper, cyanide, dichlorobromomethane, and zinc, AWEL's have been replaced with MDEL's to be consistent with the SIP. For pH, chlorine residual, and total coliform organisms, AWEL's 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 BOD_5, TSS, beta-BHC, carbon tetrachloride, chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc. The effluent limitations for these pollutants are less stringent than those in Order R5-2013-0043. 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 WQBEL's "*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 304(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 BOD_5, TSS, beta-BHC, carbon tetrachloride, chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc because the receiving water is not listed as impaired on the 303(d) list for these constituents.[1] As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for beta-BHC and carbon tetrachloride, removal of the maximum daily and mass-based effluent limitations for BOD_5 and TSS, and the relaxation of effluent limitations for chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc from Order R5-2013-0043 meet 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 section 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 that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2013-0043 was issued indicates that beta-BHC and carbon tetrachloride do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2013-0043 was issued indicates that less stringent effluent limitations for chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc based on Facility performance and available dilution credits, which satisfies the requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. **Beta-BHC.** Effluent and receiving water monitoring data collected between May 2014 and April 2017 indicates that beta-BHC in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria for the protection of human health.

ii. **Carbon Tetrachloride.** Effluent and receiving water monitoring data collected between May 2014 and April 2017 indicates that carbon tetrachloride in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria for the protection of human health.

iii. **Chlorodibromomethane.** Updated effluent data indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations, and the Sacramento River has sufficient dilution and assimilative capacity available for chlorodibromomethane. Therefore, this Order includes less stringent effluent limitations for chlorodibromomethane based on updated Facility performance and available dilution.

[1] "*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.

iv. **Copper.** Updated effluent data indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations, and the Sacramento River has sufficient dilution and assimilative capacity available for copper. Therefore, this Order includes less stringent effluent limitations for copper based on updated Facility performance and the same dilution credits allowed in Order R5-2013-0043.

v. **Dichlorobromomethane.** Updated effluent data indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations, and the Sacramento River has sufficient dilution and assimilative capacity available for dichlorobromomethane. Therefore, this Order includes less stringent effluent limitations for dichlorobromomethane based on updated Facility performance and available dilution.

vi. **Nitrate plus Nitrite.** Updated effluent data indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations, and the Sacramento River has sufficient dilution and assimilative capacity available for nitrate plus nitrite. Therefore, this Order includes less stringent effluent limitations for nitrate plus nitrite based on updated Facility performance and available dilution.

vii. **Zinc.** Updated effluent data indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations, and the Sacramento River has sufficient dilution and assimilative capacity available for zinc. Therefore, this Order includes less stringent effluent limitations for zinc based on updated Facility performance and available dilution.

4. Antidegradation Policies

The permitted surface water discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy. This Order provides for an increase in the volume and mass of pollutants discharged for chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc. The increase will not have a significant impact on beneficial uses and will not cause a violation of water quality objectives. Compliance with these requirements will result in the use of BPTC of the discharge. The impact on existing water quality will be insignificant.

This Order relaxes the effluent limitations for chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc based on the allowance of mixing zones in accordance with the Basin Plan, the SIP, U.S. EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), and the TSD. As discussed in section IV.C.2.c of this Fact Sheet, the mixing zones comply with all applicable requirements and will not be adverse to the purpose of the state and federal antidegradation policies. Furthermore, the allowance of mixing zones for these pollutants will result in a minor increase in the discharge, resulting in less than 10 percent of the available assimilative capacity in the receiving water. According to U.S. EPA's memorandum on Tier 2 Antidegradation Reviews and Significance Thresholds, any individual decision to lower water quality for non-bioaccumulative chemicals that is limited to 10 percent of the available assimilative capacity represents minimal risk to the receiving water and is fully consistent with the objectives and goals of the Clean Water Act. The Central Valley Water Board finds that any lowering of water quality outside the mixing zone will be de minimus. Further, any change to water quality will be consistent with the maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than prescribed in State Water Board policies or the Basin Plan. The measures implemented required by

this Order result in the implementation of BPTC. Thus, the relaxation of the effluent limitations for chlorodibromomethane, copper, dichlorobromomethane, nitrate plus nitrite, and zinc, is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy.

This Order removes effluent limitations for beta-BHC and carbon tetrachloride based on updated information, as described further in sections IV.C.3 and IV.D.3 of this Fact Sheet. The removal of effluent limitations for beta-BHC and carbon tetrachloride will not result in a decrease in the level of treatment or control, or a reduction in water quality. Therefore, the Central Valley Water Board finds that the removal of the effluent limitations for beta-BHC and carbon tetrachloride 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 the State Antidegradation Policy.

This Order also removes maximum daily and mass-based effluent limitations for BOD_5 and TSS based on 40 C.F.R. part 122.45(d) and (f), and as described further in sections IV.C.3 and IV.D.3 of this Fact Sheet. The removal of maximum daily and mass-based effluent limits for BOD_5 and TSS will not result in a decrease in the level of treatment or control, or a reduction in water quality. The Central Valley Water Board finds that the removal of maximum daily and mass-based effluent limits for BOD_5 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 the State Antidegradation Policy.

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 BOD_5, TSS, and pH. 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. For BOD_5, TSS, and pH, both technology-based effluent limitations and WQBEL's 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 WQBEL's for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to 30 May 2000, but not approved by U.S. EPA before that date, are nonetheless "*applicable water quality standards for purposes of the CWA*" pursuant to 40 C.F.R. section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--	--	--	TTC
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.0	8.5	BP
Total Suspended Solids	mg/L	10	15	--	--	--	TTC
	% Removal	85	--	--	--	--	CFR
Priority Pollutants							
Chlorodibromomethane	µg/L	9.2	--	24	--	--	CTR
Copper, Total Recoverable	µg/L	33	--	52	--	--	CTR
Cyanide, Total (as CN)	µg/L	14	--	28	--	--	CTR
Dichlorobromomethane	µg/L	43	--	89	--	--	CTR
Zinc, Total Recoverable	µg/L	180	--	300	--	--	CTR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	0.62	1.4	--	--	--	NAWQC
	lbs/day[2]	18	40	--	--	--	
Chlorine, Total Residual	mg/L	--	0.011[3]	0.019[4]	--	--	NAWQC
Chlorpyrifos	µg/L	[5]	[6]	--	--	--	TMDL
Diazinon	µg/L	[5]	[6]	--	--	--	TMDL
Nitrate Plus Nitrite (as N)	mg/L	45	68	--	--	--	MCL
Total Coliform Organisms	MPN/100 mL	--	23[7]	240[8]	--	500	DDW
Acute Toxicity	% survival	--	--	70[9]/90[10]	--	--	BP

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

1 TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 C.F.R 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 WLA's in the applicable TMDL.
MCL – Based on the Primary Maximum Contaminant Level.
DDW – Based on California Division of Drinking Water recommendations.

2 Based on an average daily discharge flow of 3.4 MGD.

3 Applied as a 4-day average effluent limitation.

4 Applied as a 1-hour average effluent limitation.

5 Average Monthly Effluent Limitation

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

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

6 Average Weekly Effluent Limitation

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

$C_{D\,W\text{-}AVG}$ = average weekly diazinon effluent concentration in µg/L.
$C_{C\,W\text{-}AVG}$ = average weekly chlorpyrifos effluent concentration in µg/L.

7 Applied as a 7-day median effluent limitation.

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

9 70% minimum of any one bioassay.

10 90% median for any three consecutive bioassays.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications

The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.

G. Recycling Specifications

Treated wastewater discharged for recycling is regulated under Water Reclamation Requirements Order 98-016, or its update, and must meet the requirements of CCR, Title 22.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria, where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides,

radioactivity, salinity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

B. Groundwater

1. The beneficial uses of the underlying groundwater are MUN, 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 with a MUN beneficial use. These include, at a minimum, compliance with MCL's 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 the beneficial uses of the underlying groundwater.

3. Nitrate, which was found to be present in the wastewater, has the potential to degrade groundwater quality because there is little ability for attenuation in the shallow permeable vadose zone beneath the Facility. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCL's in groundwater that is designated with a MUN beneficial use. The California Primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the Facility has a MUN beneficial use. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate, as nitrogen, to implement the Chemical Constituents objective to protect the MUN beneficial use of groundwater.

4. 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 40 C.F.R. 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. **Whole Effluent Toxicity (WET).** 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, the Discharger 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.

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

d. **Drinking Water Policy.** On 26 July 2013, the Central Valley Water Board adopted Resolution 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.

e. **Effluent Limits Based on Facility Performance.** This provision allows the Central Valley Water Board to reopen this Order, as appropriate, to revise interim and/or final effluent limitations where Facility performance was considered in development of the limitations (e.g., performance-based effluent limitations for copper, cyanide, zinc, nitrate plus nitrite, and disinfection byproducts) should the Discharger provide information demonstrating the increase in discharge concentrations have been caused by water conservation efforts, drought conditions, and/or the change in disinfection chemicals.

f. **Diazinon and Chlorpyrifos Basin Plan Amendment.** This provision allows the Central Valley Water Board to reopen this Order to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

g. **Chronic Toxicity Trigger.** This provision allows the Central Valley Water Board to reopen this Order to revise the chronic toxicity monitoring trigger if the Discharger provides new information demonstrating a higher trigger will ensure compliance with the Basin Plan's narrative toxicity objective.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity (WET) Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) Based on whole

effluent chronic toxicity testing performed by the Discharger from May 2014 through April 2017, 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.

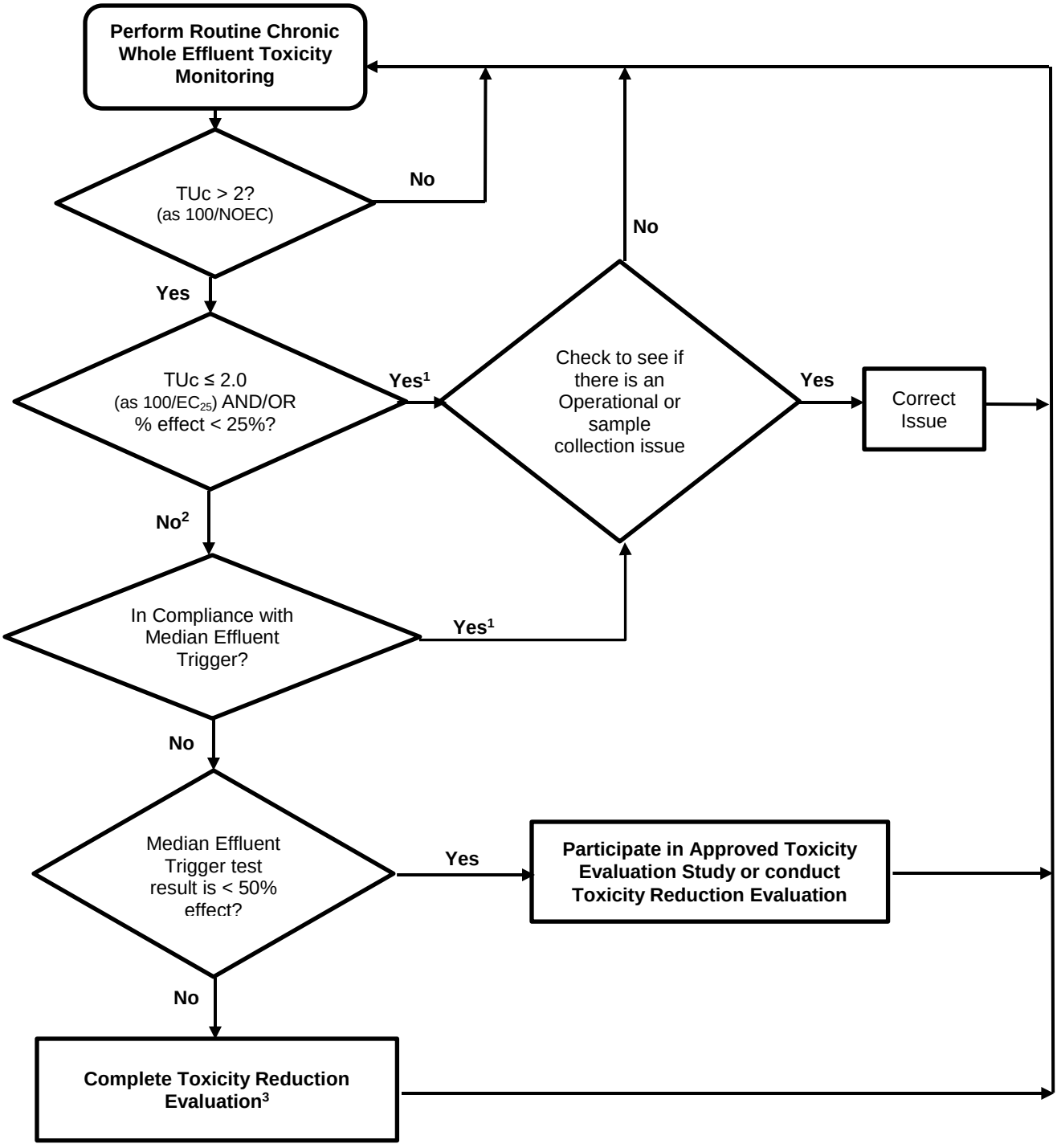
The MRP of this Order requires chronic WET monitoring for demonstration of compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger, this provision requires the Discharger either participate in an approved TES or conduct a site-specific TRE.

A TES may be conducted in lieu of a TRE if the percent effect is less than 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, 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.

If the chronic toxicity is > 2 TUc (as 100/NOEC) **AND** the percent effect is ≤ 50 percent at 50 percent effluent, as the median of three consecutive bioassays within a 6-week period, the Discharger may participate in an approved TES in lieu of a TRE.

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.

Figure F-2
WET Accelerated Monitoring Flow Chart



[1] The Discharger shall 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.** This Order requires the Discharger to prepare a salinity evaluation and minimization plan to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River.

4. Construction, Operation, and Maintenance Specifications

a. The operation and maintenance specifications for the Facility are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order R5-2013-0043. In addition, reporting requirements related to use of the storage ponds are required to monitor their use and the potential impact on groundwater.

b. **Effluent Diffuser Line.** The operation and maintenance specifications for the Facility outfall and diffuser line are necessary to ensure proper function and flow-through capacity.

5. Special Provisions for Publicly-Owned Treatment Works (POTW's)

a. **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 Facility. 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.

b. **Pretreatment Requirements**

i. The federal CWA section 307(b), and federal regulations, 40 C.F.R. part 403, require POTW's to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants that will interfere with treatment plant operations or sludge disposal and prevent pass-through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 C.F.R. part 403.

ii. The Discharger shall implement and enforce its approved pretreatment program, which is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Board, or U.S. EPA may take enforcement actions against the Discharger as authorized by the CWA.

c. **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 MRP 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 1 mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMP's) and report all sanitary sewer overflows (SSO's), 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.

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

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 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., BOD_5 and TSS reduction requirements). The monitoring frequencies for flow (continuous), BOD_5 (weekly), pH (continuous), TSS (weekly), and total recoverable metals (annually) at Monitoring Location INF-001 have been retained from Order R5-2013-0043.

2. Order R5-2013-0043 required weekly influent mass calculations for BOD_5 and TSS. The Central Valley Water Board has determined that influent mass calculations for BOD_5 and TSS are not necessary to determine compliance with conditions established in this Order. Thus, influent mass calculation requirements for BOD_5 and TSS have not been retained from Order R5-2013-0043.

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 and discharge prohibitions, 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), BOD_5 (weekly), pH (continuous), TSS (weekly), chlorodibromomethane (monthly), copper (monthly), cyanide (monthly), dichlorobromomethane (monthly), zinc (monthly), ammonia (monthly), unionized ammonia (monthly), chlorine residual (continuous), chlorpyrifos (annually), diazinon (annually), electrical conductivity (monthly), hardness (monthly), nitrate (monthly), nitirite (monthly), nitrate plus nitrite (monthly), standard minerals (annually), termperature (weekly), total coliform organisms (weekly), and total dissolved solids (monthly) at Monitoring Location EFF-001 have been retained from Order R5-2013-0043

to determine compliance with effluent limitations, where applicable, and characterize the effluent for these parameters.

3. Monitoring data collected over the previous permit term for beta-BHC and carbon tetrachloride did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific effluent monitoring requirements for these parameters have not been retained from Order R5-2013-0043.

4. Mass-based effluent limitations have been established in this Order for ammonia because it is an oxygen demanding substance. Therefore, monthly mass calculations for ammonia in the effluent have been established at Monitoring Location EFF-001 in order to determine compliance with the mass-based limitations in this Order.

5. This Order establishes requirements for the Discharger to conduct effluent dissolved oxygen monitoring twice per month at Monitoring Location EFF-001 to ensure that the effluent is not causing receiving level dissolved oxygen levels to fall below the Basin Plan water quality objectives.

6. This Order requires that pollutants be analyzed using the analytical methods described in 40 C.F.R. part 136 or a U.S. EPA approved Alternate Testing Procedure. However, where no methods are specified for a standard, an alternate method can be approved by the Central Valley Water Board. This Order requires either EPA 8141A or EPA 625M methods be utilized for chlorpyrifos and diazinon. These alternate analytical methods are necessary to determine compliance with the effluent limits for these constituents. Basin Plan water quality objectives for chlorpyrifos and diazinon are 0.015 µg/L and 0.10 µg/L, respectively, as a 4-day average (see Attachment F, section IV.C.3 for more information). Therefore, chlorpyrifos and diazinon must be analyzed using analytical methods that have a lower MDL than the Basin Plan water quality objectives.

7. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires effluent monitoring for priority pollutants and other constituents of concern quarterly during the year 2021. This monitoring frequency has been retained from Order R5-2013-0043. See section IX.C of the MRP (Attachment E) for more detailed requirements related to performing priority pollutant monitoring.

8. 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.*" 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, dissolved oxygen, and pH, and immediate analysis is required for temperature (40 C.F.R. section 136.3(e), Table II). The Discharger maintains an ELAP certified laboratory on-site and conducts analyses for chlorine residual, dissolved oxygen, and pH within the required 15 minute hold times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2013-0043, quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2013-0043, annual chronic WET testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

b. Order R5-2013-0043 required upstream receiving water monitoring at Monitoring Location RSW-001, located 100 feet upstream of Discharge Point 001. This location is difficult to access and river conditions often result in water quality that is not representative of the main channel of the Sacramento River. Therefore, this Order re-locates Monitoring Location RSW-001 to a location approximately 100 feet upstream of the City of Anderson Water Pollution Control Facility's outfall, which is more safely accessible and more representative of the water quality of the main channel of the Sacramento River.

c. Receiving water monitoring frequencies and sample types for flow (daily), pH (weekly), chlorodibromomethane (annually), dissolved copper (monthly) total recoverable copper (monthly), cyanide (monthly), dichlorobromomethane (annually), dissolved zinc (monthly), total recoverable zinc (monthly), dissolved oxygen (weekly), electrical conductivity (weekly), hardness (monthly), standard minerals (annually), temperature (weekly), and turbidity (weekly) at Monitoring Location RSW-001 have been retained from Order R5-2013-0043 to determine compliance with applicable receiving water limitations and characterize the receiving water for these parameters.

d. Receiving water monitoring frequencies and sample types for flow (daily), pH (weekly), dissolved oxygen (weekly), electrical conductivity (weekly), hardness (monthly), standard minerals (annually), temperature (weekly), and turbidity (weekly) at Monitoring Location RSW-002 have been retained from Order R5-2013-0043 to determine compliance with applicable receiving water limitations and characterize the receiving water for these parameters.

e. Monitoring data collected over the previous permit term for beta-BHC did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific receiving water monitoring requirements for this parameter at Monitoring Location RSW-001 have not been retained from Order R5-2013-0043.

f. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires upstream receiving water monitoring for priority pollutants and other pollutants of concern quarterly during the year 2021, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See section IX.C of the MRP (Attachment E) for more detailed requirements related to performing priority pollutant monitoring.

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.

2. **Water Supply Monitoring**

Water supply monitoring is required to evaluate the source of constituents in the wastewater. Consistent with Order R5-2013-0043, this Order requires water supply monitoring for electrical conductivity (quarterly), total dissolved solids (quarterly), standard minerals (annually), total recoverable copper (quarterly), and total recoverable zinc (quarterly) at Monitoring Location SPL-001.

3. **Land Discharge Monitoring**

Land discharge monitoring is required to ensure that the discharge to the land disposal area complies with the Storage Pond and Land Disposal Operating Requirements in section VI.C.4 of this Order. Consistent with Order R5-2013-0043, this Order requires monthly monitoring of the available freeboard in the emergency storage ponds at Monitoring Locations LND-001 and LND-002.

4. **Recycling Discharge Monitoring**

Recycling discharge monitoring requirements for flow and total coliform organisms are required to evaluate compliance with Water Recycling Requirements Order 98-016, or its update.

5. **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 ensures 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 Redding, Stillwater Wastewater Treatment 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 publishing in the local newspaper, the Record Searchlight, for one (1) day.

The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:

http://www.waterboards.ca.gov/centralvalley/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 16 April 2018.

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:	31 May, 1 June 2018
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

D. Reconsideration of Waste Discharge Requirements

Any 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 CCR, 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, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The ROWD, other supporting documents, and comments received are on file and may be inspected at the Central Valley Water Board's Redding Office at 364 Knollcrest Drive, Suite 205, Redding, CA 96002 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 (530) 224-4845.

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 Jeremy Pagan at (530) 224-4850.

G.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
4,4-DDE	µg/L	0.012 (DNQ)	<0.0030	0.00059	1.1	0.0010	0.00059	0.00059	--	--	No[1]
Ammonia Nitrogen, Total (as N)	mg/L	3.7[2]	<0.010	0.67	2.14[3]	0.67[4]	--	--	--	--	Yes
beta-BHC	µg/L	<0.0020	<0.0030	0.014	--	--	0.014	0.046	--	--	No
Carbon Tetrachloride	µg/L	0.13	<0.050	0.25	--	--	0.25	4.4	--	0.50	No
Chlorodibromomethane	µg/L	8.93	<0.060	0.41	--	--	0.41	34	--	80[5]	Yes
Copper, Dissolved	µg/L	20.1	3.5	5.6	8.0	5.6	1,300	--	7.9	1,000	Yes
Copper, Total Recoverable	µg/L	21.2	7.1	5.9	8.4	5.9	1,300	--	8.2	1,000	Yes
Cyanide, Total (as CN)	µg/L	5.6	<1.0	5.2	22	5.2	700	22,000	10	150	Yes
Dichlorobromomethane	µg/L	24.3	0.10	0.56	--	--	0.56	46	--	80[5]	Yes
Dieldrin	µg/L	0.0041 (DNQ)	<0.0020	0.00014	0.24	0.056	0.00014	0.00014	--	--	No[1]
Heptachlor	µg/L	0.018	<0.0020	0.00021	0.52	0.0038	0.00021	0.00021	--	--	No[1]
Nitrate, Total (as N)	mg/L	29.1	0.24	10	--	--	--	--	--	10	Yes
Nitrite, Total (as N)	mg/L	0.040	<0.010	1.0	--	--	--	--	--	1.0	No
Zinc, Dissolved	µg/L	114	14.6	22	74	74	7,400	26,000	22	5,000	Yes
Zinc, Total Recoverable	µg/L	115	4.6[fn]	22	76	76	7,400	26,000	22	5,000	Yes

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
DNQ = Detected but Not Quantified
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) See section IV.C.3 of the Fact Sheet for a discussion of the RPA results.
(2) According to the cover letter submitted with the October 2016 eSMR, the ammonia reading of 3.7 mg/L is not representative of normal operating conditions.
(3) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
(4) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.
(5) Represents the Primary MCL for total trihalomethanes, which includes bromoform, chlorodibromomethane, chloroform, and dichlorobromomethane.

H.

ATTACHMENT H – CALCULATION OF WQBEL'S

Human Health WQBEL's Calculations										
Parameter	**Units**	**Criteria**	**Mean Background Concentration**	**CV Eff[1]**	**Dilution Factor**	**MDEL/AMEL Multiplier**	**AMEL Multiplier**	**AMEL**	**MDEL**	**AWEL**
Chlorodibromomethane	µg/L	0.41	<0.60	1.16	25	2.67	2.10	9.2	24	--
Dichlorobromomethane	µg/L	0.56	0.10	0.64	92	2.07	1.59	43	89	--
Nitrate Nitrogen, Total (as N)	mg/L	10	0.14	0.41	3.5	1.69	1.37	45	--	68

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

Aquatic Life WQBEL's Calculations																	
Parameter	**Units**	**Criteria**		**B**	**CV Eff[1]**	**Dilution Factors**		**Aquatic Life Calculations**							**Final Effluent Limitations**		
		CMC	**CCC**			**CMC**	**CCC**	**ECA Multiplier$_{acute}$**	**LTA$_{acute}$**	**ECA Multiplier$_{chronic}$**	**LTA$_{chronic}$**	**AMEL Multiplier$_{95}$**	**AWEL Multiplier**	**MDEL Multiplier$_{99}$**	**AMEL[2]**	**AWEL[3]**	**MDEL[4]**
Ammonia Nitrogen, Total (as N)	mg/L	2.14	0.67	<0.01	0.60	--	--	0.32	0.687	0.78	0.523	1.19	2.68	--	0.62	1.4	--
Chlorpyrifos	µg/L	0.025	0.015	<0.0069	--	--	--	0.32	0.0080	0.53	0.0079	1.55	2.68	--	0.012	0.021	--
Diazinon	µg/L	0.16	0.10	<0.0052	--	--	--	0.32	0.051	0.53	0.053	1.55	2.68	--	0.079	0.14	--
Copper, Total Recoverable	µg/L	8.2[5]	5.9	3.6[6]	0.34	10	14	0.49	26.37	0.69	25.70	1.30	--	2.04	33	--	52
Cyanide, Total (as CN)	µg/L	10[5]	5.2	<1.0	0.60	2	5	0.32	9.0	0.53	13.8	1.55	--	3.11	14	--	28
Zinc, Total Recoverable	µg/L	22[5]	76	4.67[6]	0.42	16	1.8	0.43	127	0.63	129	1.38	--	2.35	180	--	300

1 CV was established in accordance with section 1.4 of the SIP.
2 Average Monthly Effluent Limitations are calculated according to section 1.4 of the SIP using a 95th percentile occurrence probability.
3 Average Weekly Effluent Limitations are calculated according to section 1.4 of the SIP using a 98th percentile occurrence probability.
4 Maximum Daily Effluent Limitations are calculated according to section 1.4 of the SIP using a 99th percentile occurrence probability.
5 Maximum dissolved background concentrations were used to evaluate assimilative capacity for these metals.
6 CMC replaced with more stringent Basin Plan maximum concentration objective.