CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CA0077682
ORDER R5-2021-0019

WASTE DISCHARGE REQUIREMENTS FOR THE SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT SACRAMENTO COUNTY

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

Table 1. Discharger Information

Discharger:	Sacramento Regional County Sanitation District
Name of Facility:	Sacramento Regional Wastewater Treatment Plant
Facility Street Address:	8521 Laguna Station Road
Facility City, State, Zip:	Elk Grove, CA 95758
Facility County:	Sacramento County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Treated Municipal Wastewater	38° 27' 15"	121° 30' 00"	Sacramento River

Table 3. Administrative Information

This Order was Adopted on:	**22 April 2021**
This Order shall become effective on:	**1 June 2021**
This Order shall expire on:	**31 May 2026**
The Discharger shall file a Report of Waste Discharge (ROWD) as an application for reissuance of WDRs in accordance with title 23, California Code of Regulations, and an application for reissuance of a NPDES permit no later than:	**1 June 2025**
The United States Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	**Major**

I, Patrick Pulupa, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 22 April 2021.

Date: 2021.05.17 15:46:43 -07'00'

PATRICK PULUPA, Executive Officer

WASTE DISCHARGE REQUIREMENTS
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ATTACHMENTS

I. FACILITY INFORMATION

Information describing the Sacramento Regional County Sanitation District, Sacramento Regional Wastewater Treatment Plant (Facility) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

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

A. Legal Authorities. This Order serves as waste discharge requirements (WDR's) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260).This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit authorizing the Discharger to discharge into waters of the United States at the discharge location described in Table 2 subject to the WDR's in this Order.

B. 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 Public Resources Code.

C. 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 I are also incorporated into this Order.

D. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections IV.B, IV.C, V.B, VI.C.4.a, and VI.C.6.a 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.

E. 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.

F. 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.

G. 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 R5-2016-0020-01 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater from the Facility, as the Facility is specifically described in the Fact Sheet in section II.B, in a manner different from that described in this Order is prohibited, with the exception of the disinfected secondary effluent that may be reclaimed for dust control and compaction on construction projects, landscape irrigation, wash down water, vehicle washing and grounds maintenance within the Facility boundaries, and for flushing of pipelines within the sewer collection system. It may also be used for in-plant process water and fire protection and used in the tertiary treatment plant and distribution system. Any use of reclaimed disinfected secondary effluent must meet the requirements of California Code of Regulations

(CCR), Title 22, section 60301, et seq. and the associated State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW) guidelines, as applicable. Runoff of disinfected secondary effluent is prohibited except as regulated by Master Reclamation Permit 97-146.

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) and as described in section II of the Fact Sheet (Attachment F) for the Groundwater Corrective Action Program (CAP).

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

D. Discharge of waste classified as 'hazardous', as defined in CCR, Title 22, section 66261.1 et seq., is prohibited.

E. Discharge to the Sacramento River is prohibited when the Sacramento River instantaneous flow is less than 1,300 cubic feet per second (cfs) at Monitoring Location RSWU-001.

F. Discharge to the Sacramento River is prohibited when there is less than a 14 to 1 (river to effluent) flow ratio over a rolling 1-hour period available in the Sacramento River at RSWU-001.

G. **Average Dry Weather Flow**. Discharges exceeding an average dry weather flow of 181 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

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

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

Table 4. Effluent Limitations

Parameters	Units	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°Celsius (BOD_5)	milligrams per liter (mg/L) (see table note 1. below)	10	15	--
Total Suspended Solids (TSS)	mg/L (see table note 1. below)	10	15	--
Bis(2-Ethylhexyl)Phthalate	micrograms per liter (µg/L)	8.9	--	20
Chlorodibromomethane	µg/L	22	--	44
Copper, Total	µg/L	7.4	--	12
Cyanide, Total (as CN)	µg/L	11	--	22
Dichlorobromomethane	µg/L	31	--	70
Ammonia Nitrogen, Total (as N)	mg/L (see table note 2. below)	2.1	2.6	--
Ammonia Nitrogen, Total (as N)	mg/L (see table note 3. below)	2.4	3.2	--
Ammonia Nitrogen, Total (as N)	Pounds per day (lbs/day) (see table notes 2. and 4. below)	3,200	3,900	--
Ammonia Nitrogen, Total (as N)	Pounds per day (lbs/day) (see table notes 3. and 4. below)	3,600	4,800	--
Nitrate Plus Nitrite, Total (as N)	mg/L	16.1	22	--
Nitrate Plus Nitrite, Total (as N)	lbs/day	15,095	--	--
Settleable Solids	mL/L	0.1	0.2	--

Table 4 Notes:

1. The final effluent limitations for BOD_5 and TSS become effective **9 May 2023.** Effective upon completion of the tertiary filtration upgrades and written Executive Officer approval, compliance with final effluent limitations for BOD_5 and TSS shall be measured at Monitoring Location TER-001. Otherwise, compliance shall be measured at Monitoring Location EFF-001.

2. Effluent limitations applicable from 1 April through 31 October.

3. Effluent limitations applicable from 1 November through 31 March.

4. Based on an average dry weather flow of 181 MGD.

b. **pH**:

i. 6.0 standard units (SU) as an instantaneous minimum.

ii. 8.0 SU as an instantaneous maximum.

c. **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. Effective upon completion of the tertiary filtration upgrades and written Executive Officer approval, compliance with final effluent limitations for BOD_5 and TSS percent removal shall be measured at Monitoring Location TER-001. Otherwise, compliance shall be measured at Monitoring Location EFF-001.

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

i. 70 percent, minimum for any one bioassay; and

ii. 90 percent, median for any three consecutive bioassays.

e. **Temperature.** The maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

f. **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.

g. **Chronic Whole Effluent Toxicity (WET). Effective 1 May 2026,** the effluent chronic toxicity shall not exceed 8 chronic toxicity units (TUc) (as 100/NOEC) **AND** a percent effect of 25 percent at 12.5 percent effluent, for any endpoint as the median of up to three consecutive chronic toxicity tests within a 6-week period.

h. **Total Coliform Organisms. Effective 9 May 2023,** effluent total coliform organisms shall not exceed the following with compliance measured after chlorination and prior to dechlorination:

i. **May through October:**

(a) 2.2 most probable number per 100 milliliters (MPN/100 mL), as a 7-day median;

(b) 23 MPN/100 mL, more than once in any 30-day period;

(c) 240 MPN/100 mL, at any time.

ii. **November through April:**

(a) 2.2 MPN/100 mL, as a monthly median;

(b) 23 MPN/100 mL, as a weekly median;

(c) 240 MPN/100 mL, at any time.

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

i. Average Monthly Effluent Limitation (AMEL)

$S_{AMEL} = C_{D\ M\text{-}avg}/0.079 + C_{C\ M\text{-}avg}/0.012 \leq 1.0$

$C_{D\ M\text{-}AVG}$ = 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)

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

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

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

j. **Electrical Conductivity @ 25°C.** The effluent calendar year annual average electrical conductivity shall not exceed 1,300 µmhos/cm.

k. **Methylmercury. Effective 31 December 2030,** the effluent calendar year annual methylmercury load shall not exceed 89 grams.

2. Interim Effluent Limitations

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

a. **BOD_5 and TSS. Effective immediately and until 8 May 2023,** the Discharger shall maintain compliance with the effluent limitations specified in Table 5.

Table 5. Interim Effluent Limitations – BOD_5 and TSS

Parameters	Units	Average Monthly	Average Weekly
Biochemical Oxygen Demand 5-day @ 20°Celsius	mg/L	30	45
Biochemical Oxygen Demand 5-day @ 20°Celsius	lbs/day (see table note below)	45,000	68,000
Total Suspended Solids	mg/L	30	45
Total Suspended Solids	lbs/day (see table note below)	45,000	68,000

Table 5 Note:

1. Based on an average dry weather flow of 181 MGD.

b. **Total Coliform Organisms. Effective immediately and until 8 May 2023,** effluent total coliform organisms shall not exceed the following with compliance measured after chlorination and prior to dechlorination.

i. 23 MPN/100 mL, as a weekly median; and

ii. 500 MPN/100mL, in any two consecutive days, as a daily maximum.

c. **Mercury, Total. Effective immediately and until 30 December 2030,** the effluent calendar year annual total mercury load shall not exceed 1,043 grams. This interim effluent limitation shall apply in lieu of the final effluent limitation for methylmercury (section IV.A.1.k).

d. **Chronic Whole Effluent Toxicity (WET). Effective immediately and until 30 April 2026,** the effluent chronic toxicity shall not exceed 16 TUc (as 100/NOEC) AND a percent effect of 25 percent at 6.25 percent effluent, for any endpoint as the median of up to three consecutive chronic toxicity tests within a 6-week period. This interim effluent limitation shall apply in lieu of the final effluent limitation for chronic WET (section IV.A.1.g).

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

Recycling specifications applicable to the Discharger are included in Master Reclamation Permit 97-146.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in Sacramento River:

1. **Bacteria.** The six-week rolling geometric mean of Escherichia coli (E. coli) shall not exceed 100 colony forming units (cfu) per 100 milliliters (mL), calculated weekly, and a statistical threshold value (STV) of 320 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.

2. **Biostimulatory Substances.** Water to contain biostimulatory substances that 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**: The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.

6. **Floating Material**. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

7. **Oil and Grease**. Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

8. **pH**. The pH to be depressed below 6.5 nor raised above 8.5.

9. **Pesticides**:

    a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

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

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

    d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution 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 concentration in excess of the maximum contaminant levels (MCL's) set forth in CCR, Title 22, division 4, chapter 15; nor

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

10. **Radioactivity**:

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

b. Radionuclides to be present in excess of the MCL's specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the CCR.

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

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

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

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

15. Temperature:

a. If the natural receiving water temperature is less than 65°F, the discharge shall not create a zone, defined by water temperature of more than 2°F above natural temperature, which exceeds 25 percent of the cross sectional area of the river at any point outside the zone of initial dilution. (See Attachment F, section III.C.1.c for details regarding Thermal Plan exceptions.)

b. If the natural receiving water temperature is 65°F or greater, the discharge shall not create a zone, defined by a water temperature of 1°F or more above natural receiving water temperature which exceeds 25 percent of the cross sectional area of the river at any point outside the zone of initial dilution for more than 1 hour per day as an average in any month. (See

Attachment F, section III.C.1.c for details regarding the Thermal Plan exceptions.)

c. The discharge shall not cause the receiving water surface temperature to increase more than 4°F above the ambient temperature of the receiving water at any time or place.

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

17. **Turbidity**:

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

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

The release of waste constituents from any transport, storage, treatment, or disposal component associated with the Facility shall not cause the underlying groundwater to be degraded.

VI. PROVISIONS

A. Standard Provisions

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

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

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

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

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

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

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

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

The causes for modification include:

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

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

iii. Change in sludge use or disposal practice. Under 40 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 discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Safeguard to electric power failure:

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

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

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

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

The technical report shall:

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

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

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

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

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

a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

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

n. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

o. 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.

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

civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

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

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 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, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

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

may be reopened to address changes to the Delta Mercury Control Program.

d. **Pollution Prevention.** The Discharger previously prepared pollution prevention plans pursuant to Water Code section 13263.3(d)(3). Based on a review of the pollution prevention plans and any updates, this Order may be reopened for addition and/or modification of effluent limitations and requirements for these constituents.

e. **Whole Effluent Toxicity (WET).** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a revised acute or chronic toxicity effluent limitation, and/or an effluent limitation for a specific toxicant identified in a TRE. Additionally, if the State Water Board revises the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy of SIP) toxicity control provisions, this Order may be reopened to implement the new provisions.

f. **Water Effects *Ratios* (WER's) 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. 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.

g. **Electrical Conductivity Effluent Limits and Other Limits Based on Facility Performance.** This Order may be reopened to revise interim and/or final effluent limitations where Facility performance was considered in the development of the limitations (e.g., performance-based effluent limitations for electrical conductivity) should the Discharger provide new information demonstrating the increase in discharge concentrations have been caused by water conservation efforts, drought conditions, and/or the change in disinfection chemicals.

h. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 17 January 2020, certain Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley became effective. Other provisions subject to U.S. EPA approval became effective on 2 November 2020, when approved by U.S. EPA. As the Central Valley Water Board moves forward to implement those provisions that are now in effect, this Order may be amended or modified to incorporate new or modified requirements necessary for implementation of the Basin Plan Amendments. More information regarding these Amendments can be found on the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) web

page:
(https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/)

i. **Volatilization Study.** This Order may be reopened to revise the dilution credits and final effluent limitations for disinfection byproducts and other volatile organic compounds that account for the fate and transport of volatile organic compounds in the receiving water should the Discharger provide additional information demonstrating that these constituents attenuate further through volatilization and/or dilution. The evaluation may consider modifications to the allowed mixing zone pursuant to the SIP, section 1.4.2.1, pg. 17 allowance to consider "monitoring upstream and downstream of the discharge that characterize the extent of actual dilution."

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 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.

i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger is 8 toxicity units (TUc), as 100 divided by the No Observed Effect Concentration (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) **Initial Toxicity Check**. If the percent effect is less than 25 percent at 12.5 percent effluent, check for any operation or sample collection issues and return to routine chronic toxicity monitoring. Otherwise, if the percent effect is greater than or equal to 25 percent at 12.5 percent effluent, proceed to step (b).

(b) **Evaluate 6-week Median**. The Discharger may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity effluent limitation to evaluate compliance using a 6-week median. If test failures occur with the additional samples, the evaluation period can be extended one week for every test failure. If the 6-week median is greater than 8 TUc (as 100/NOEC) and the percent effect is greater than 25 percent at 12.5 percent effluent, proceed with subsection (c). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring. See Compliance Determination section VII.Q for procedures for calculating a 6-week median.

(c) **Toxicity Source Easily Identified.** If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the Facility and shall resume routine chronic toxicity monitoring; If the source of toxicity is not easily identified the Discharger shall conduct a site-specific TRE as described in subsection (d), below.

(d) **Toxicity Reduction Evaluation.** The Discharger shall initiate a site-specific TRE as follows:

(i) **Within thirty (30) days** of exceeding the chronic toxicity effluent limitation, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

- Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;
- Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
- A schedule for these actions.

b. **Filtration Operations Study.** After a sufficient degree of operational experience following commencement of operation of filtration facilities as designed, built and operated, including at least 3 years of circumstances described in the Future Facility description in section II.A.2 of the Fact Sheet where some biological nutrient removal (BNR) effluent does not receive filtration, a study of November through April performance of the filtration and disinfection system will be required of the Discharger. The study, to be conducted at a time determined by the Central Valley Water Board, will summarize data including the amount (on a daily basis and annual basis) of effluent that did not receive filtration, influent and effluent

flows, filter effluent turbidity, filter loading rates, effluent *Giardia* and *Cryptosporidium* data, and effluent *E. coli* and total coliform data.

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.

4. Construction, Operation and Maintenance Specifications

a. **Filtration System Operating Specifications. Effective 9 May 2023,** to ensure the filtration system is operating properly to provide adequate disinfection of the wastewater, the turbidity of the filter effluent measured at Monitoring Location FIL-001 shall not exceed the following:

i. 2 NTU as a daily average;

ii. 5 NTU more than 5 percent of the time within a 24-hour period; and

iii. 10 NTU, at any time.

b. **Emergency Storage Basin (ESB) 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.

iv. Freeboard for the total emergency storage basin system shall never be less than 2 feet (measured vertically to the lowest point of overflow).

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

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

vii. The ESBs shall be operated and maintained in accordance with the Standard Operating Procedures as approved by the Executive Officer on 24 July 2020. Modifications to the ESBs or other optimizations may require future amendments to the Standard Operating Procedures, which may be approved by the Executive Officer as individual amendments or revised Standard Operating Procedures.

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. part 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 MRP, section X.D.4 of Attachment E.

b. **Resource Recovery from Anaerobically Digestible Material (ADM).** The Discharger receives hauled-in anaerobically digestible material for injection into an anaerobic digester. The Discharger shall continue to implement Standard Operating Procedures for this activity. The Standard Operating Procedures shall address material handling, including unloading, screening, or other processing prior to anaerobic digestion; transportation; spill prevention; and spill response. In addition, the Standard Operating Procedures shall address avoidance of the introduction of materials that could cause interference, pass-through, or upset of the treatment processes; avoidance of prohibited material; vector control; odor control; operation and maintenance; and the disposition of any solid waste segregated from introduction to the digester. The Discharger shall train its staff on the Standard Operating Procedures and shall maintain records for a minimum of five years for each load received, describing the hauler, waste type, and quantity received. In addition, the Discharger shall maintain records for a minimum of five years for the disposition, location, and quantity of cumulative pre-digestion-segregated solid waste hauled off-site.

6. Other Special Provisions

a. **Seasonal Title 22, or Equivalent, Disinfection Requirements. Effective 9 May 2023,** from May to October, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DDW reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent, in accordance with the compliance schedule in section VI.C.7.a.

7. Compliance Schedules

a. **Compliance Schedule for Seasonal Title 22, or Equivalent, Disinfection Requirements. By 9 May 2023,** the Discharger shall comply with the seasonal disinfection requirements (section VI.C.6.a), final seasonal effluent limitations for total coliform organisms (section IV.A.1.h), final effluent limits for BOD_5 and TSS (section IV.A.1.a), and the filtration system operating specifications (section VI.C.4.a). The Discharger shall comply with the time schedule shown in the Technical Reports Table.

b. **Compliance Schedule for Final Effluent Limitations for Methylmercury.** This Order requires compliance with the final effluent limitations form methylmercury by **31 December 2030**. The Discharger shall comply with the time schedule shown in the Technical Reports Table.

c. **Compliance Schedule for Final Effluent Limitations for Chronic Whole Effluent Toxicity (WET).** This Order requires compliance with the final effluent limitations for chronic WET by **1 May 2026**. The Discharger shall comply with the time schedule shown in the Technical Reports Table.

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Sections IV.A.1.a and IV.A.1.c). 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.c for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Total Mercury Mass Loading Effluent Limitations (Sections IV.A.1.k and IV.A.2.c). The procedures for calculating mass loadings are as follows:

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

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

with consideration of the detection limits.

C. Average Dry Weather Discharge Prohibition (Section III.G). The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow discharge prohibition will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

D. Total Coliform Organisms Effluent Limitations (Sections IV.A.1.h and IV.A.2.b)

1. **7-Day Median.** For each day that an effluent sample is collected and analyzed for total coliform organisms, compliance with the 7-day median final effluent limitation (section IV.A.1.h.i.(a)) 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. The first compliance determination is made on 7 May of a year and the last compliance determination is made on 31 October of a year.

2. **Monthly Median.** Compliance with the total coliform monthly median final effluent limitation (section IV.A.1.h.ii.(a)) shall be determined by calculating the median value of total coliform bacteria in the effluent utilizing all total coliform results during each calendar month in which the monthly median limitation applies (i.e., November – April).

3. **Weekly Median.** Compliance with the interim weekly median effluent limitation (section IV.A.2.b.i) and final weekly median effluent limitation (section IV.A.1.h.ii.(b)) shall be determined by calculating the median value of total coliform bacteria in the effluent utilizing all total coliform results from Sunday through Saturday of each calendar week.

E. Total Residual Chlorine Effluent Limitations (Section IV.A.1.f). 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. If a false positive is confirmed, the Discharger may report the chlorine residual as 0 mg/L for those instances if supporting documentation is provided (demonstration that the value was a false positive). 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 or through positive dechlorination residual, 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. False positives shall be noted as such in the monitoring report. Both the chlorine spike and the information that the Discharger relied on to show that there wasn't a violation shall be reported. 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 the Final Effluent Limitations IV.A.1.a are based on the permitted average dry weather flow and calculated as follows:

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

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

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. Sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

   b. 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 AMEL and more than one sample result is available in a month, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the

arithmetic mean in accordance with the following procedure:

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

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

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

H. Temperature Effluent Limitation (Section IV.A.1.e) Compliance with the effluent limitation for temperature, for every day receiving water temperature samples are collected at Monitoring Location RSWU-001, shall be determined by calculating the difference between the effluent temperature and upstream receiving water temperature based on the difference in the effluent temperature at Monitoring Location EFF-001 and receiving water temperature of grab samples collected at Monitoring Location RSWU-001. The effluent temperature shall be taken from the continuous effluent data for the same time that the river grab sample was collected.

I. Chlorpyrifos and Diazinon Effluent Limitations (Section IV.A.1.i) 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.

J. Electrical Conductivity Calendar Year Annual Average Effluent Limitation (Section IV.A.1.j). Compliance shall be determined by calculating the sum of all daily discharges measured during a calendar year divided by the number of daily discharges measured during that year.

K. Temperature Receiving Water Limitations (Section V.A.15). Compliance shall be determined according to the methodology outlined in the *30 March 2017 Evaluation of the Sacramento Regional Wastewater Treatment Plant's Method of Compliance for Receiving Water Limitations*, updated April 2018.

L. Dissolved Oxygen Receiving Water Limitation (Section V.A.5). Compliance shall be determined using data samples from Monitoring Location RSWD-003.

M. Turbidity Receiving Water Limitations (Section V.A.17.a-e). Compliance shall be

determined using data samples from Monitoring Location RSWD-003 and analyzed with data samples for natural turbidity at Monitoring Location RSWU-001.

N. pH Receiving Water Limitations (Section V.A.8). Compliance shall be determined using data samples from Monitoring Location RSWD-003.

O. Use of Delta Regional Monitoring Program and Other Receiving Water Data to Determine Compliance with Receiving Water Limitations. Delta Regional Monitoring Program data and other receiving water monitoring data that is not specifically required to be conducted by the Discharger under this Order will not be used directly to determine that the discharge is in violation of this Order. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger that is not conducted by the Delta Regional Monitoring Program and submit that monitoring data. As described in section VIII of Attachment E, such data may be used, if scientifically defensible, in conjunction with other receiving water data, effluent data, receiving water flow data, and other pertinent information to determine whether or not a discharge is in compliance with this Order.

P. Acute Whole Effluent Toxicity (WET) Effluent Limitation (Section IV.A.1.d). For each 96-hour acute bioassay test result, compliance with the acute WET 90 percent median survival effluent limitation shall be determined based on the median of that test result and the previous two test results.

Q. Chronic Whole Effluent Toxicity Effluent Limitation (Sections IV.A.1.g and IV.A.2.d). To evaluate compliance with the chronic WET effluent limit, the median TUc shall be the median of up to three consecutive chronic toxicity bioassays during a 6-week period. This includes a routine chronic toxicity monitoring event and two subsequent optional compliance monitoring events. If additional compliance monitoring events are not conducted, the median is equal to the result for routine chronic toxicity monitoring event. If only one additional compliance monitoring event is conducted, the median will be established as the arithmetic mean of the routine monitoring event and compliance monitoring event. If test failures occur with the additional samples, the evaluation period can be extended one week for every test failure.

In determining compliance with the final effluent limitation in sections IV.A.1.g (effective **1 May 2026**), where the median chronic toxicity units exceed 8 TUc (as 100/NOEC), the Discharger will be deemed out of compliance with the final chronic toxicity effluent limitation if the median percent effect at 12.5 percent effluent exceeds 25 percent. The percent effect used to evaluate compliance with the final chronic toxicity effluent limitation shall be based on the chronic toxicity bioassay result(s) from the sample(s) used to establish the median TUc result. If the median TUc is based on two equal chronic toxicity bioassay results, the percent effect of the sample with the greatest percent effect shall be used to evaluate compliance with the final chronic toxicity effluent limitation.

In determining compliance with the interim effluent limitation in section IV.A.2.d (effective immediately, until **30 April 2026**), where the median chronic toxicity units

exceed 16 TUc (as 100/NOEC) for any endpoint, the Discharger will be deemed out of compliance with the interim chronic toxicity effluent limitation if the median percent effect at 6.25 percent effluent for the same endpoint also exceeds 25 percent. The percent effect used to evaluate compliance with the interim chronic toxicity effluent limitation shall be based on the chronic toxicity bioassay result(s) from the sample(s) used to establish the median TUc result. If the median TUc is based on two equal chronic toxicity bioassay results, the percent effect of the sample with the greatest percent effect shall be used to evaluate compliance with the interim chronic toxicity effluent limitation.

ATTACHMENT A – DEFINITIONS

1Q10
The lowest one-day flow with an average reoccurrence frequency of once in ten years.

7Q10
The lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years

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

Arithmetic mean = $\mu = \Sigma x / n$

where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

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

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

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

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

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

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

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

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

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

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effect Concentration (EC)
A point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). 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). IC25 is a point estimate of the toxic concentration that would cause a 25-percent reduction in a non-lethal biological measurement.

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

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

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

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

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

Method Detection Limit (MDL)
MDL is the minimum measured concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in in 40 C.F.R. Part 136, Attachment B.

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

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

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

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

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

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

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

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

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies,

including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

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

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

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

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

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

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

ATTACHMENT B – MAP

Figure B-1. Sacramento Regional County Sanitation District, Sacramento Regional Wastewater Treatment Plant Site Map

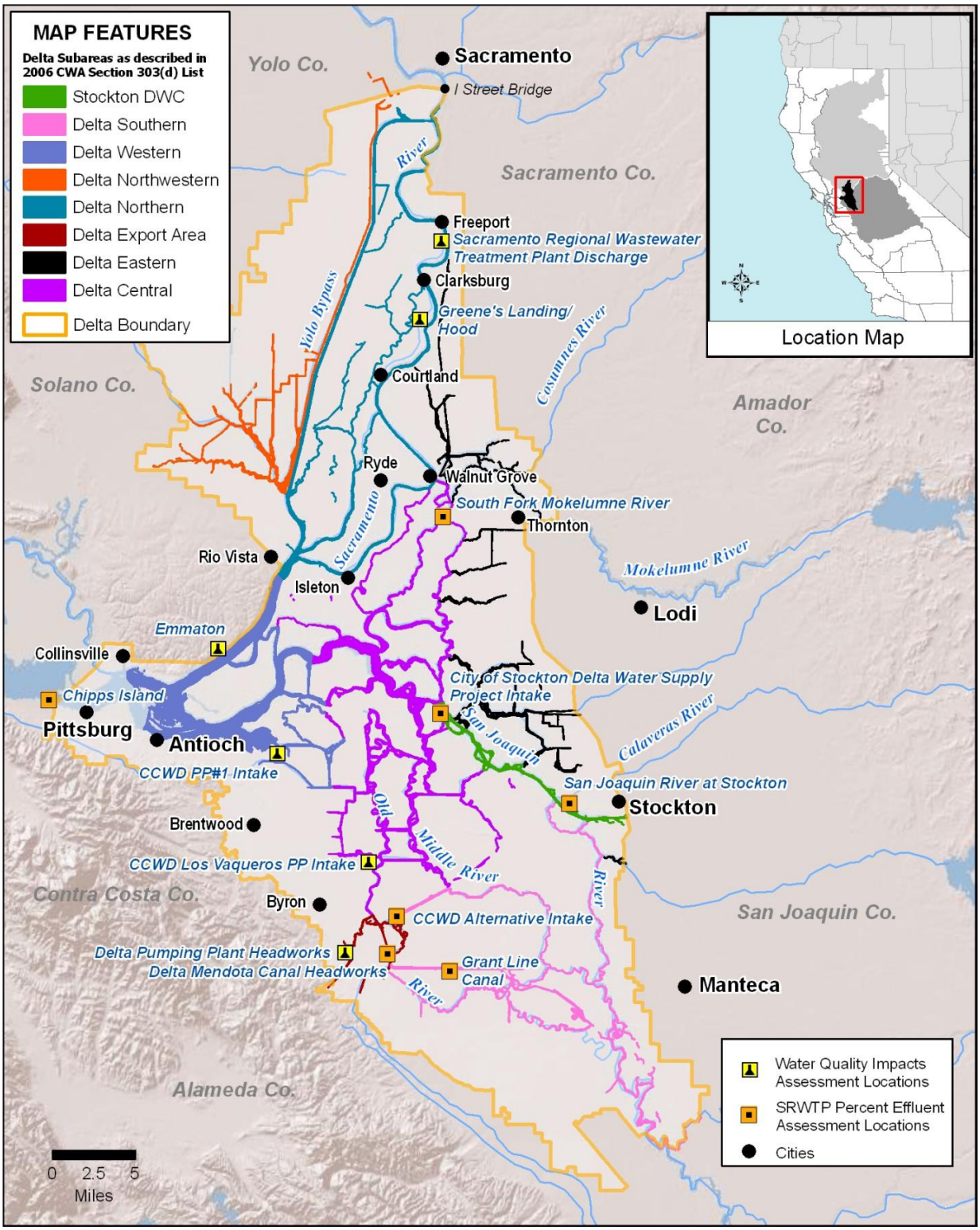
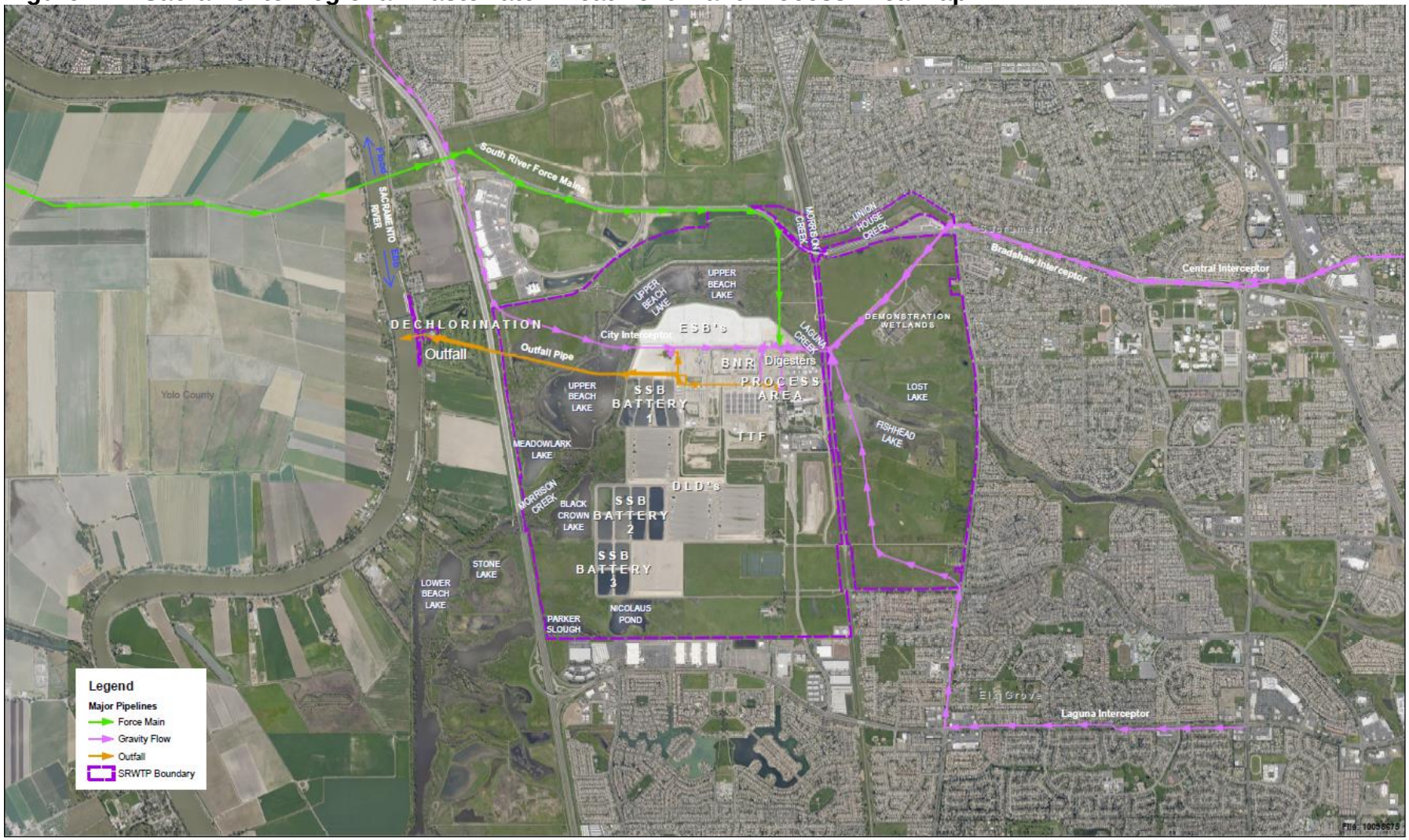


Figure B-2. Sacramento Regional Wastewater Treatment Plant Process Area Map



ATTACHMENT C – FLOW SCHEMATIC

Figure C-1. Current Flow Schematic

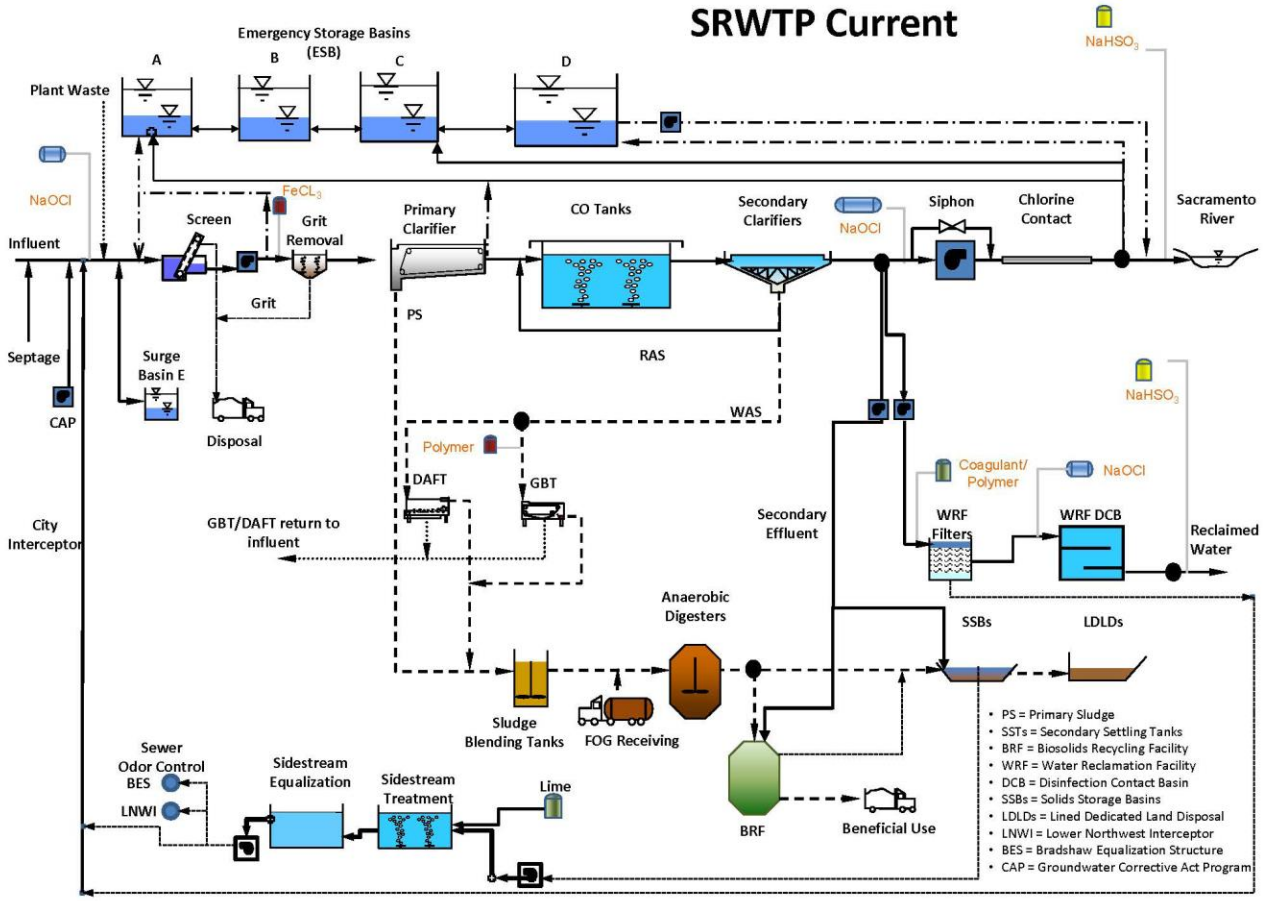
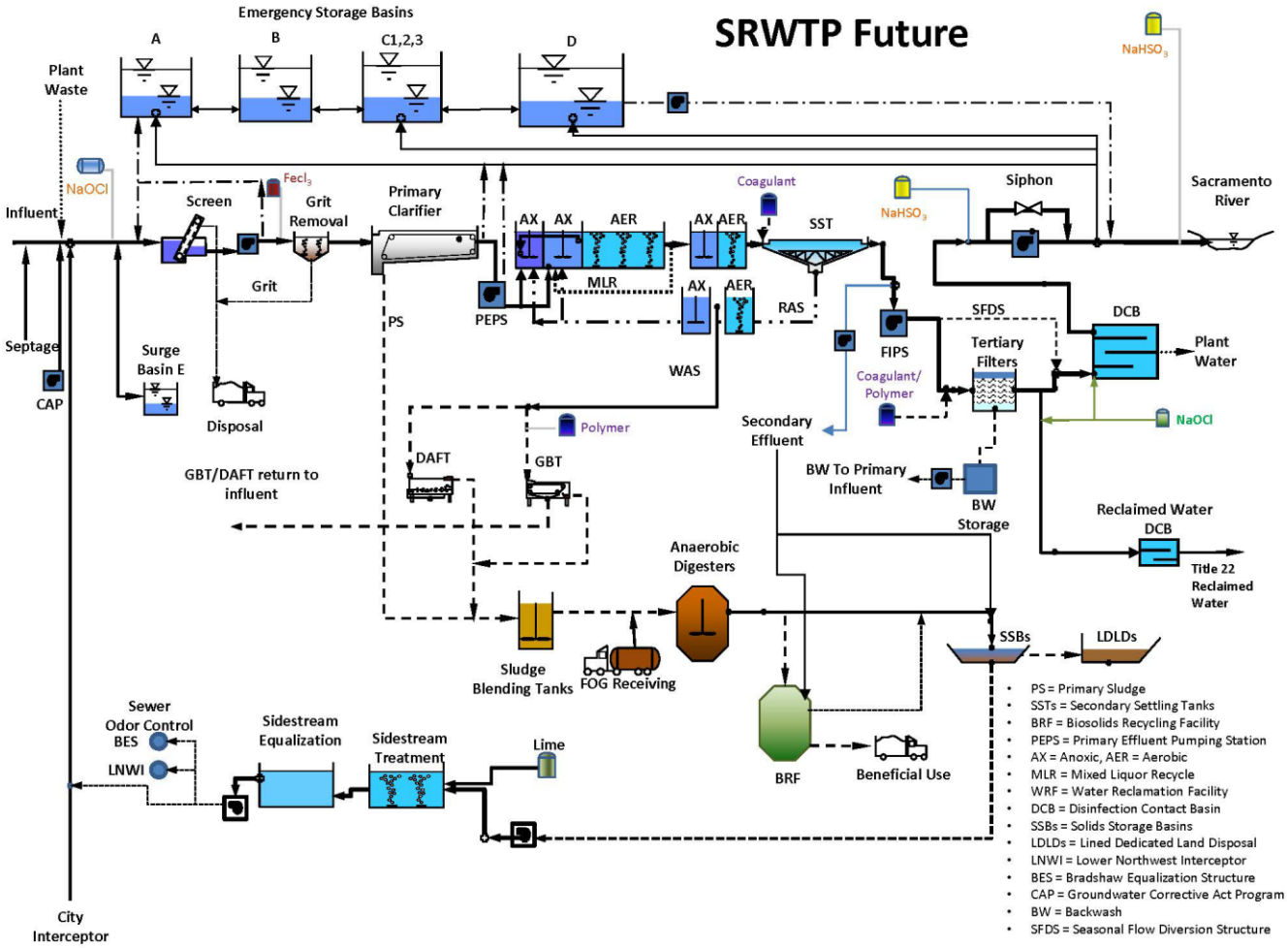


Figure C-2. Future Flow Schematic



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply:

1. The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof.
(40 C.F.R. section 122.41(a); Wat. Code, sections 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. section 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. section 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. section 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 having 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. section 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. section 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. section 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. section 1318(a)(4)(B); 40 C.F.R. section 122.41(i); Wat. Code, section 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 section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(1); Wat. Code, sections 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. section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(2); Wat. Code, sections 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 section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(3); Wat. Code, section 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 section 1318(a)(4)(B); 40 C.F.R. section 122.41(i)(4); Wat. Code, sections 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. section 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. section 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. section 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. section 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. section 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. section 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. section 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. section 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. section 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. section 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. section 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. section 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, thorough properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. section 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. section 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. section 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. section 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. section 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. section 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. section 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. section 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. section 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. section 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. sections 122.21(e)(3), 122.41(j)(4); 122.44(i)(1)(iv))

IV. STANDARD PROVISIONS – RECORDS

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

2. The individual(s) who performed the sampling or measurements (40 C.F.R. section 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 C.F.R. section 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 C.F.R. section 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 C.F.R. section 122.41(j)(3)(v)); and

6. The results of such analyses. (40 C.F.R. section 122.41(j)(3)(vi))

C. Claims of confidentiality for the following information will be denied (40 C.F.R. section 122.7(b)):

1. The name and address of any permit applicant or Discharger

(40 C.F.R. section 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. section 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. section 122.41(h); Wat. Code, sections 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. section 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. section 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. section 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. section 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. section 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. section 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. section 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 section 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. section 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. section 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. section 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. section 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. section 122.41(l)(5))

E. Twenty-Four Hour Reporting

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

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

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

(40 C.F.R. section 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. section 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. section 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. section 122.41(l)(1)(ii))

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. section 122.41(l)(1)(iii))

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order’s requirements. (40 C.F.R. section 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. section 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. section 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. section 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. section 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. section 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. section 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. section 122.42(b)(3)).

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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

I. GENERAL MONITORING PROVISIONS

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

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

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory accredited for such analyses by the State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW), in accordance with the provision of Water Code section 13176. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. Data generated from field measurements such as pH, dissolved oxygen, electrical conductivity, turbidity, temperature, and residual chlorine, are exempt pursuant to Water Code section 13176. A manual containing the steps followed in this program for any field measurements such as pH, DO, EC, turbidity, temperature, and residual chlorine must be kept on-site in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to U.S. EPA guidelines or to procedures approved by the Central Valley Water Board.

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

E. Monitoring results, including noncompliance, shall be reported at intervals and in a

manner specified in this MRP.

F. Laboratory analytical methods shall be sufficiently sensitive in accordance with the Sufficiently Sensitive Methods Rule (SSM Rule) specified under 40 C.F.R. sections 122.21(e)(3) and 122.44(i)(1)(iv). A U.S. EPA-approved analytical method is sufficiently sensitive for a pollutant/parameter where:

1. The method minimum level (ML) is at or below the applicable water quality objective for the receiving water, or;

2. The method ML is above the applicable water quality objective for the receiving water but the amount of the pollutant/parameter in the discharge is high enough that the method detects and quantifies the level of the pollutant/parameter, or;

3. The method ML is above the applicable water quality objective for the receiving water, but the ML is the lowest of the 40 C.F.R. part 136 U.S. EPA-approved analytical methods for the pollutant/parameter.

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 or electronically via email to the DMR-QA Coordinator:

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	A location where a representative sample of the influent into the Facility can be collected prior to entering the treatment process.
001	EFF-001	A location where a representative sample of the effluent from the Facility can be collected. Latitude: 38° 27’ 15” N Longitude: 121° 30’ 00” W
001	TER-001	A location where a representative sample of tertiary treated wastewater can be obtained downstream of the filtration and disinfection systems and prior to discharge to the emergency storage basins (ESB’s) or the Sacramento River.
--	ESB-A through ESB-E	ESB’s A through E
--	RSWU-001	In the Sacramento River, upstream from Discharge Point 001, at Freeport Bridge.
--	RSWD-003	In the Sacramento River, 4,200 feet downstream of Discharge Point 001, at Cliff’s Marina.
--	FIL-001	A location where a representative sample of the Facility’s filtration system effluent can be obtained without influence from downstream unit processes or flows.

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 the Facility’s influent at Monitoring Location INF-001 in accordance with Table E-2 and the testing requirements described in section III.A.2, below:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
Biochemical Oxygen Demand (5-day @ 20°Celsius)	mg/L	24-hour Composite	1/Day
pH	standard units	Meter	Continuous
Total Suspended Solids	mg/L	24-hour Composite	1/Day
Electrical Conductivity @ 25˚C	µmhos/cm	24-hour Composite	1/Week
Total Dissolved Solids	mg/L	24-hour Composite	1/Month

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

   a. **Applicable to all parameters.** Parameters 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. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 C.F.R. part 136-allowed sample type.

   b. **24-hour composite samples** shall be collected from a 24-hour flow proportional composite. In the event of composite malfunction, a grab sample must be substituted.

   c. **pH.** Grab samples to be collected whenever the continuous pH meter is offline for 30 minutes or longer.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor the effluent at Monitoring Location EFF-001 in accordance with Table E-3 and the testing requirements described in section IV.A.2 below:

Table E-3. Effluent Monitoring – Monitoring Location EFF-001

Pollutant Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
Effluent/River Dilution Ratio	--	Calculation	Continuous
Biochemical Oxygen Demand (5-day @ 20°Celsius) (BOD_5)	mg/L	24-hour Composite	1/Day
BOD_5	lbs/day	Calculate	1/Day
BOD_5	% removal	Calculate	1/Month
Oil and Grease	mg/L	Grab	1/Month
pH	standard units	Meter	Continuous
Total Suspended Solids (TSS)	mg/L	24-hour Composite	1/Day
TSS	lbs/day	Calculate	1/Day
TSS	% removal	Calculate	1/Month
Bis(2-Ethylhexyl)Phthalate	µg/L	Grab	1/Month
Chlorodibromomethane	µg/L	Grab	1/Month
Copper, Dissolved	µg/L	24-hour Composite	1/Month
Copper, Total	µg/L	24-hour Composite	1/Month
Cyanide, Total (as CN)	µg/L	Grab	1/Month
Dichlorobromomethane	µg/L	Grab	1/Month
Mercury, Total	ng/L	24-hour Composite	1/Month
Alkalinity (as $CaCO_3$)	mg/L	24-hour Composite	1/Month
Ammonia Nitrogen, Total (as N)	mg/L	24-hour Composite	1/Day
Ammonia Nitrogen, Total (as N)	lbs/day	Calculate	1/Day
Chlorine, Total Residual	mg/L	Meter	Continuous
Cryptosporidium	oocysts/100 mL	Grab	1/Month
Chlorpyrifos	µg/L	Grab	1/Year
Diazinon	µg/L	Grab	1/Year
Dissolved Organic Carbon	mg/L	24-hour Composite	1/Quarter
Dissolved Oxygen	mg/L	Meter	Continuous
Electrical Conductivity @ 25°Celsius	µmhos/cm	24-hour Composite	1/Week
Giardia	oocysts/100 mL	Grab	1/Month
Hardness, Total (as $CaCO_3$)	mg/L	24-hour Composite	1/Month

Pollutant Parameter	**Units**	**Sample Type**	**Minimum Sampling Frequency**
Methylmercury	ng/L	24-hour Composite	1/Month
Nitrate plus Nitrite, Total (as N)	mg/L	24-hour Composite	1/Week
Settleable Solids	mL/L	24-hour Composite	1/Day
Sulfur Dioxide or Sodium Bisulfite	mg/L	Meter	Continuous
Temperature	F°	Meter	Continuous
Total Coliform Organisms	MPN/100 mL	Grab	1/Day
Total Dissolved Solids	mg/L	24-hour Composite	1/Week
Total Kjeldahl Nitrogen	mg/L	24-hour Composite	1/Week
Total Organic Carbon	mg/L	24-hour Composite	1/Month

2. **Table E-3 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-4:

   a. **Applicable to all parameters.** Parameters 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. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 C.F.R. part 136 allowed sample type.

   b. **Running Hourly Average Effluent/River Dilution Ratio.** The Discharger shall report the lowest, highest, and average ratio calculated for each day.

   c. **24-hour composite samples** shall be collected from a 24-hour flow proportional composite. In the event of composite malfunction, a grab sample must be substituted.

   d. **Temperature** and **pH** shall be recorded at the time of **ammonia** sample collection.

   e. Effluent **pH** shall be measured continuously at 1-second intervals and tracked as a 20-minute running average. The highest and lowest 20-minute averages each day shall be reported.

   f. **Priority Pollutants**. For all priority pollutant constituents listed in Table E-4 (bis(2-ethylhexyl)phthalate, chlorodibromomethane, copper,

cyanide, dichlorobromomethane, and mercury), 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* (State Implementation Policy or SIP) and the SSM Rule specified under 40 C.F.R. sections 122.21(e)(3) and 122.4(i)(1)(iv).

g. In order to verify if **bis(2-ethylhexyl)phthalate** is truly present in the effluent discharge, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

h. Samples taken at the effluent without preservatives may be analyzed for **cyanide** within 15 minutes from collection and must be performed by a laboratory certified for such analysis by DDW.

i. **Total Mercury and Methylmercury.** Unfiltered methylmercury and total mercury samples shall be taken using **clean hands/dirty hands procedures**, as described in U.S. EPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2). The analysis of methylmercury and total mercury shall be by U.S. EPA method 1630 and1631 (Revision E), respectively, with a **reporting limit of 0.05 ng/L for methylmercury and 0.5 ng/L for total mercury**.

j. **Ammonia** samples shall be collected concurrently with whole effluent toxicity (WET) monitoring.

k. **Total Residual Chlorine** must be monitored using an analytical method that is sufficiently sensitive to measure at the permitted level of 0.01 mg/L.

l. **Chlorpyrifos and Diazinon** shall be sampled using U.S. EPA Method 625.1, Method 8141, or equivalent GC/MS method with a lower Reporting Limit than the Basin Plan Water Quality Objectives of 0.015 µg/L and 0.1 µg/L for chlorpyrifos and diazinon, respectively.

m. ***Cryptosporidium*** shall be analyzed using U.S. EPA Method 1622, 1623, or 1623.1.

n. ***Giardia*** shall be analyzed using U.S. EPA Method 1623 or 1623.1.

o. **Hardness** samples shall be collected concurrently with metals samples.

p. Samples for **total coliform organisms** shall be collected after chlorination and prior to dechlorination. The sample must be dechlorinated immediately after sample collection. Upon completion of the tertiary filtration upgrades and written Executive Officer approval the monitoring

for total coliform organisms per Table E-3 shall be discontinued and the monitoring shall be conducted per Table E-4

q. Upon completion of the tertiary filtration upgrades and written Executive Officer approval all monitoring for **BOD_5 and TSS** at Monitoring Location EFF-001 per Table E-3 shall be discontinued and the monitoring shall be conducted at Monitoring Location TER-001 per Table E-4. Reporting of pounds discharged will no longer be required at that time because mass effluent limitations for BOD_5 and TSS will no longer be in effect.

B. Monitoring Location TER-001

1. Upon completion of tertiary upgrades to the Facility and written Executive Officer approval, the Discharger shall monitor effluent from the Facility at Monitoring Location TER-001 in accordance with Table E-4 and the testing requirements described in section IV.B.2 below:

Table E-4. Effluent Monitoring – Monitoring Location TER-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Biochemical Oxygen Demand (5-day @ 20°Celsius) (BOD_5)	mg/L	24-hour Composite	1/Day
BOD_5	% removal	Calculate	1/Month
Total Suspended Solids (TSS)	mg/L	24-hour Composite	1/Day
TSS	% removal	Calculate	1/Month
Total Coliform Organisms	MPN/100 mL	Grab	1/Day

2. **Table E-4 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-5:

   a. **Applicable to all parameters.** Parameters 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. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 C.F.R. part 136-allowed sample type.

   b. **24-hour composite samples** shall be collected from a 24-hour flow proportional composite. In the event of composite malfunction, a grab sample must be substituted.

   c. Samples for **total coliform organisms** shall be collected after chlorination and prior to dechlorination. The sample must be dechlorinated immediately after sample collection.

V. WHOLE EFFLUENT TOXICITY (WET) 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 acute toxicity testing requirement:

1. **Monitoring Frequency** – The Discharger shall perform **weekly** acute toxicity testing, concurrent with effluent ammonia sampling.

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

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

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

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

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

1. **Monitoring Frequency** – The Discharger shall perform routine monthly chronic toxicity testing. Additional monitoring performed in a month as follow-up to previous month testing may be used to satisfy routine monitoring requirements in the month that the sample was collected. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 8 TUc (as 100/NOEC) AND a percent effect greater than 25 percent at 12.5 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 one week apart, and the final monitoring event shall be initiated no later than 6 weeks from the routine monitoring event that exhibited toxicity. See Compliance Determination section VII.Q for procedures for calculating a 6-week median.

2. **Sample Types** – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSWU-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** – The testing shall be conducted using the most sensitive species. The Discharger shall conduct chronic toxicity tests with *Ceriodaphnia dubia* unless otherwise specified in writing by the Executive Officer.

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

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

7. **Dilutions** – For routine and compliance chronic toxicity monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. If the receiving water is toxic, laboratory water control may be used as the diluent.

Table E-5. Chronic Toxicity Testing Dilution Series

Samples	Dilution%	Dilution%	Dilution%	Dilution%	Dilution%	Controls
% Effluent	50	25	12.5	6.25	3.125	0
% RSWU-001	50	75	87.5	93.75	96.875	100
% RSWD-003	0	0	0	0	0	100
% Laboratory Water	0	0	0	0	0	100

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 Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in the Method Manual.

c. If the testing laboratory cannot interpret toxicity due to issues within the test, based on U.S. EPA guidance documents, and recommends retesting, then the test may be considered a test failure and a repeat test may be conducted.

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 within 45 days following completion of the test and shall contain, at minimum:

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

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the 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 annual SMR shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring type, i.e., routine, compliance, TES, or TRE monitoring.

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly SMR's 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 Workplan, or as amended by the Discharger's TRE Action Plan.

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

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

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

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

E. Most Sensitive Species Screening. The Discharger shall perform re-screening to re-evaluate the most sensitive species following the completion of tertiary treatment facilities. A rescreening must be performed prior to permit reissuance and results submitted with the Report of Waste Discharge (ROWD).

1. **Frequency of Testing for Species Sensitivity Screening.** Species sensitivity screening for chronic toxicity shall include, at a minimum, chronic WET testing four consecutive calendar quarters using the water flea (*Ceriodaphnia dubia*), fathead minnow (*Pimephales promelas*), and green alga (*Pseudokirchneriella subcapitata*). The tests shall be performed using 100 percent effluent and one control. If the first two species sensitivity re-screening events result in no change in the most sensitive species, the Discharger may cease the species sensitive re-screening testing and the most sensitive species will remain unchanged.

2. **Determination of Most Sensitive Species.** If a single test in the species sensitivity screening testing exceeds 1 TUc (as 100/NOEC), then the species used in that test shall be established as the most sensitive species. If there is more than a single test that exceeds 1 TUc (as 100/NOEC), then of the species exceeding 1 TUc (as 100/NOEC) that exhibits the highest percent effect shall be established as the most sensitive species. If none of the tests in the species sensitivity screening exceeds 1 TUc (as 100/NOEC), but at least one of the species exhibits a percent effect greater than 10 percent, then the single species that exhibits the highest percent effect shall be established as the most sensitive species. In all other circumstances, the Executive Officer shall have discretion to determine which single species is the most sensitive considering the test results from the species sensitivity screening.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Locations ESB-A through ESB-E

1. The Discharger shall monitor diverted wastewater to the ESB's at Monitoring Locations ESB-A through ESB-E, when wastewater is present, as follows:

Table E-6. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
Reason for Diversion	--	Narrative	--
Duration of Diversion	Hours	Narrative	Per each intermittent diversion event
Description (e.g., Influent or Effluent)	--	Narrative	Per each intermittent diversion event
Freeboard	0.1 feet	Measurement	1/Week

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger is required to participate in the Delta Regional Monitoring Program. Delta Regional Monitoring Program data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Order. Delta Regional Monitoring Program monitoring stations are established generally as "integrator sites" to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta Regional Monitoring Program monitoring stations would not normally be able to identify the source of any specific constituent but would be used to identify water quality issues needing further evaluation. Delta Regional Monitoring Program monitoring data, along with the individual Discharger data, may be used to help establish background receiving water quality for reasonable potential analyses (RPA's) in an NPDES permit after evaluation of the applicability of the data for that purpose. Delta Regional Monitoring Program data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger's discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to determine the likely source or sources of a constituent that resulted in the exceedance of a water quality objective.

A. Monitoring Location RSWU-001 and RSWD-003

1. The Discharger shall monitor the Sacramento River at Monitoring Locations RSWU-001 and RSWD-003 in accordance with Table E-7 and the testing requirements described in section VIII.A.2 below:

Table E-7. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	cfs	Meter	Continuous
E. Coli Organisms	CFU/100 mL or MPN/100 mL	Grab	1/Quarter
pH	standard units	Grab	1/Month
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month
Dissolved Organic Carbon	mg/L	Grab	1/Quarter
Dissolved Oxygen	mg/L	Grab	1/Month
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month
Temperature	°F	Grab	1/Month
Total Nitrogen	mg/L	Grab	1/Month
Turbidity	NTU	Grab	1/Month

2. **Table E-7 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-8:

   a. **Applicable to all parameters.** Parameters 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. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 C.F.R. part 136 allowed sample type.

   b. Monitoring for Sacramento River **flow** is required at Monitoring Location RSWU-001 only. Flow meters used to report flow at RSWU-001 are maintained by the United States Geological Service (USGS) and are not the responsibility of the Discharger.

   c. **Temperature** and **pH** shall be recorded at the time of **ammonia** sample collection.

3. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by RSWU-001 and RSWD-003 when discharging to the Sacramento River. The direction of river flow shall be reported, and attention shall be given to the presence of:

   a. Floating or suspended matter;

   b. Discoloration;

   c. Bottom deposits;

   d. Aquatic life;

   e. Visible films, sheens, or coatings;

   f. Fungi, slimes, or objectionable growths; and

   g. Potential nuisance conditions.

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

IX. OTHER MONITORING REQUIREMENTS

A. Filtration System Monitoring

1. **Monitoring Location FIL-001. Effective 9 May 2023,** the Discharger shall monitor the filtration system at Monitoring Location FIL-001 in accordance with Table E-8 and the testing requirements described in section IX.A.2 below:

Table E-8. Filtration System Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
Turbidity	NTU	Meter	Continuous

2. **Table E-8 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-9:

   a. Parameters 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. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 C.F.R. part 136 allowed sample type. The Discharger may use the Hach 5300 having received U.S. EPA approval of Hach 10258.

b. For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration in which the analyzer(s) is not in operation. If analyzer(s) fail to provide continuous monitoring for more than two hours, the Discharger shall obtain and report hourly manual and/or grab sample results.

c. Report daily average and maximum **turbidity**.

B. Pyrethroid Pesticides Monitoring

1. **Water Column Chemistry Monitoring Requirements**. The Discharger shall conduct effluent and receiving water baseline monitoring in accordance with Table E-9. Quarterly monitoring shall be conducted for **one year, beginning January 2024**, concurrent with the Effluent and Receiving Water Characterization Monitoring. The Discharger shall also submit a minimum of one duplicate sample for quality assurance/quality control (QA/QC) during the year to be analyzed for the constituents listed in Table E-9.

   The monitoring shall be conducted in the effluent at Monitoring Location EFF-001 and downstream receiving water at Monitoring Location RSWD-003 and the results of such monitoring shall be submitted to the Central Valley Water Board with the quarterly SMR's. The Discharger shall use Environmental Laboratory Accreditation Program (ELAP)-accredited laboratories and methods for pyrethroid pesticides water column chemistry monitoring. ELAP-accredited methods are acceptable for pyrethroid chemical analysis provided that the method meets the analytical capability described in Table E-9. A current list of ELAP approved laboratories and points of contact can be found on the Central Valley Water Board's website, (https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/central_valley_pesticides/pyrethroid_tmdl_bpa/index.html).

   Monitoring can either be conducted by the Discharger or can be done as part of a group monitoring effort. If the Discharger chooses to participate in a group monitoring effort, the timing and the other study requirements of the monitoring can be modified by the Executive Officer.

Table E-9. Pyrethroid Pesticides Monitoring

Parameter	CAS Number	Sample Units	Sample Type	Analytical Method	Reporting Level
Total Bifenthrin	82657-04-3	ng/L	Grab	To be determined	1.3
Total Cyfluthrin	68359-37-5	ng/L	Grab	To be determined	1.3
Total Cypermethrin	52315-07-8	ng/L	Grab	To be determined	1.7
Total Esfenvalerate	51630-58-1	ng/L	Grab	To be determined	3.3
Total Lambda-cyhalothrin	91465-08-6	ng/L	Grab	To be determined	1.2
Total Permethrin	52645-53-1	ng/L	Grab	To be determined	10
Freely Dissolved Bifenthrin	82657-04-3	ng/L	Calculated	Calculated from total concentration	--
Freely Dissolved Cyfluthrin	68359-37-5	ng/L	Calculated	Calculated from total concentration	--
Freely Dissolved Cypermethrin	52315-07-8	ng/L	Calculated	Calculated from total concentration	--
Freely Dissolved Esfenvalerate	51630-58-1	ng/L	Calculated	Calculated from total concentration	--
Freely Dissolved Lambda-cyhalothrin	91465-08-6	ng/L	Calculated	Calculated from total concentration	--
Freely Dissolved Permethrin	52645-53-1	ng/L	Calculated	Calculated from total concentration	--
Dissolved Organic Carbon (DOC)	--	mg/L	Grab	--	--
Total Organic Carbon (TOC)	--	mg/L	Grab	--	--

The freely dissolved concentration of each quantified pyrethroid pesticide in a sample may be directly measured or estimated using partition coefficients. Methods for direct measurement must be approved by the Executive Officer before they are used to determine the freely dissolved pyrethroid concentrations that are used for determining exceedances of the pyrethroid pesticides numeric triggers.

To estimate the freely dissolved concentration of a pyrethroid pesticide with partition coefficients, the following equation shall be used:

$$C_{dissolved} = \frac{C_{total}}{1 + (K_{OC} \times [POC]) + (K_{DOC} \times [DOC])}$$

Where:

C dissolved = concentration of a an individual pyrethroid pesticide that is in the freely dissolved phase (ng/L),

C total = total concentration of an individual pyrethroid pesticide in water (ng/L),

KOC = organic carbon-water partition coefficient for the individual pyrethroid pesticide (L/kg),

[POC] = concentration of particulate organic carbon in the water sample (kg/L), which can be calculated as [POC]=[TOC]-[DOC],

[TOC] = total organic carbon in the sample (kg/L)

KDOC = dissolved organic carbon-water partition coefficient (L/kg),

[DOC] = concentration of dissolved organic carbon in the sample (kg/L).

Site-specific or alternative study-based partition coefficients approved by the Executive Officer may be used for KOC and KDOC in the above equation. If site-specific or alternative study-based partition coefficients are not available or have not been approved, the following partition coefficients shall be used for KOC and KDOC in the above equation:

Table E-10. Pyrethroid Pesticides Monitoring

Pyrethroid Pesticide	Receiving water KOC (L/kg)	Receiving water KDOC (L/kg)	Effluent KOC (L/kg)	Effluent KDOC (L/kg)
Bifenthrin	4,228,000	1,737,127	15,848,932	800,000
Cyfluthrin	3,870,000	2,432,071	3,870,000	2,432,071
Cypermethrin	3,105,000	762,765	6,309,573	200,000
Esfenvalerate	7,220,000	1,733,158	7,220,000	1,733,158
Lambda-cyhalothrin	2,056,000	952,809	7,126,428	200,000
Permethrin	6,074,000	957,703	10,000,000	200,000

2. **Water Column Toxicity Monitoring Requirements**. When discharging to the Sacramento River, the Discharger shall monitor the toxicity of the downstream receiving water in accordance with U.S. EPA method EPA-821-R-02-012 (Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, USEPA, October 2002, or most recent edition).

   Except as specified in this order, water column toxicity testing shall follow the measurement quality objectives provided in the Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance Program Plan (SWRCB,

2018). When feasible, toxicity testing shall be conducted using the Southern California Coastal Water Research Project (SCCWRP) guidance (Schiff and Greenstein, 2016) on test organism age and size for *Hyalella azteca*.

For consistency with EPA Method EPA-821-R-02-012 and ELAP accreditation, *Hyalella azteca* water column toxicity testing for baseline monitoring must be performed at 20 degrees Celsius.

Quarterly monitoring shall be conducted for one year, concurrent with the Pyrethroid Pesticides Water Column Chemistry Monitoring during Effluent and Receiving Water Characterization Monitoring (see section IX.E of this MRP for specific dates). Downstream receiving water monitoring shall be conducted at Monitoring Location RSWD-003 when discharging to the Sacramento River and the results of such monitoring shall be submitted to the Central Valley Water Board with the quarterly SMR's. Monitoring can either be conducted by the Discharger or can be done as part of a group monitoring effort. If the Discharger chooses to participate in a group monitoring effort, the timing of the monitoring can be modified by the Executive Officer.

C. Effluent and Receiving Water Characterization

1. Since the Discharger is participating in the Delta Regional Monitoring Program, as described in Attachment E, section VIII, this section only requires effluent characterization monitoring. However, the ROWD for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant constituents (Appendix A to 40 C.F.R. part 423) during the term of the permit. The ambient background characterization monitoring event shall be conducted at Monitoring Location RSWU-001. Data from the Delta Regional Monitoring Program may be utilized to characterize the receiving water in the permit renewal. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with the ROWD. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point.

2. **Monthly Monitoring.** Samples shall be collected from the effluent (Monitoring Location EFF-001) and analyzed for the constituents listed in Table E-11, below. Constituents shall be collected and analyzed consistent with the Discharger's Analytical Methods Report (MRP, section X.D.1) using sufficiently sensitive analytical methods and RL's per the SSM Rule specified in 40 C.F.R. section 122.21(e)(3) and 122.44(i)(1)(iv). The "Reporting Level" is synonymous with the "Method Minimum Level" described in the SSM Rule. Monitoring shall be conducted monthly for 1 year, beginning January 2024, and the results of such monitoring shall be submitted to the Central Valley Water

Board no later than 1 April 2025.

For the characterization monitoring, the Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month per the monitoring required by Table E-3 or the Pretreatment Program requirements per Attachment E, section X.D.4.a, except for hardness, pH, and temperature.

3. **Sample Type.** Effluent samples shall be taken as described in Table E-11, below.

4. **Analytical Methods Report Certification.** Prior to beginning the Effluent and Receiving Water Characterization monitoring, the Discharger shall provide a certification acknowledging the scheduled start date of the Effluent and Receiving Water Characterization monitoring and confirming that samples will be collected and analyzed as described in the previously submitted Analytical Methods Report. If there are changes to the previously submitted Analytical Methods Report, the Discharger shall outline those changes. A one-page certification form will be provided by Central Valley Water Board staff with the permit's Notice of Adoption that the Discharger can use to satisfy this requirement. The certification form shall be submitted electronically via CIWQS submittal by the due date in the Technical Reports Table.

5. The Discharger shall conduct effluent characterization monitoring in accordance with Table E-11 and the testing requirements described in section IX.C.6 below.

Table E-11. Effluent Characterization Monitoring

VOLATILE ORGANICS

CTR Number	Volatile Organic Parameters	CAS Number	Units	Effluent Sample Type
25	2-Chloroethyl vinyl Ether	110-75-8	µg/L	Grab
17	Acrolein	107-02-8	µg/L	Grab
18	Acrylonitrile	107-13-1	µg/L	Grab
19	Benzene	71-43-2	µg/L	Grab
20	Bromoform	75-25-2	µg/L	Grab
21	Carbon Tetrachloride	56-23-5	µg/L	Grab
22	Chlorobenzene	108-90-7	µg/L	Grab
24	Chloroethane	75-00-3	µg/L	Grab
26	Chloroform	67-66-3	µg/L	Grab
35	Chloromethane	74-87-3	µg/L	Grab
23	Dibromochloromethane	124-48-1	µg/L	Grab
27	Dichlorobromomethane	75-27-4	µg/L	Grab
36	Methylene Chloride	75-09-2	µg/L	Grab
33	Ethylbenzene	100-41-4	µg/L	Grab
34	Methyl Bromide (Bromomethane)	74-83-9	µg/L	Grab
38	Tetrachloroethylene (PCE)	127-18-4	µg/L	Grab
39	Toluene	108-88-3	µg/L	Grab
40	trans-1,2-Dichloroethylene	156-60-5	µg/L	Grab
43	Trichloroethylene (TCE)	79-01-6	µg/L	Grab
44	Vinyl Chloride	75-01-4	µg/L	Grab
NL	Methyl-tert-butyl ether (MTBE)	1634-04-4	µg/L	Grab
41	1,1,1-Trichloroethane	71-55-6	µg/L	Grab
42	1,1,2-Trichloroethane	79-00-5	µg/L	Grab
28	1,1-Dichloroethane	75-34-3	µg/L	Grab
30	1,1-Dichloroethylene (DCE)	75-35-4	µg/L	Grab
31	1,2-Dichloropropane	78-87-5	µg/L	Grab
32	1,3-Dichloropropylene	542-75-6	µg/L	Grab
37	1,1,2,2-Tetrachloroethane	79-34-5	µg/L	Grab
29	1,2-Dichloroethane	107-06-2	µg/L	Grab
75	1,2-Dichlorobenzene	95-50-1	µg/L	Grab
76	1,3-Dichlorobenzene	541-73-1	µg/L	Grab
77	1,4-Dichlorobenzene	106-46-7	µg/L	Grab

SEMI-VOLATILE ORGANICS

CTR Number	Semi-Volatile Organic Parameters	CAS Number	Units	Effluent Sample Type
60	Benzo(a)Anthracene	56-55-3	µg/L	Grab
85	1,2-Diphenylhydrazine	122-66-7	µg/L	Grab
101	1,2,4-Trichlorobenzene	120-82-1	µg/L	Grab
45	2-Chlorophenol	95-57-8	µg/L	Grab
46	2,4-Dichlorophenol	120-83-2	µg/L	Grab
47	2,4-Dimethylphenol	105-67-9	µg/L	Grab
49	2,4-Dinitrophenol	51-28-5	µg/L	Grab
82	2,4-Dinitrotoluene	121-14-2	µg/L	Grab
55	2,4,6-Trichlorophenol	88-06-2	µg/L	Grab
83	2,6-Dinitrotoluene	606-20-2	µg/L	Grab
50	2-Nitrophenol	88-75-5	µg/L	Grab
71	2-Chloronaphthalene	91-58-7	µg/L	Grab
78	3,3-Dichlorobenzidine	91-94-1	µg/L	Grab
62	Benzo(b)Fluoranthene	205-99-2	µg/L	Grab
52	4-Chloro-3-methylphenol	59-50-7	µg/L	Grab
48	2-Methyl-4,6-Dinitrophenol	534-52-1	µg/L	Grab
51	4-Nitrophenol	100-02-7	µg/L	Grab
69	4-Bromophenyl Phenyl Ether	101-55-3	µg/L	Grab
72	4-Chlorophenyl Phenyl Ether	7005-72-3	µg/L	Grab
56	Acenaphthene	83-32-9	µg/L	Grab
57	Acenaphthylene	208-96-8	µg/L	Grab
58	Anthracene	120-12-7	µg/L	Grab
59	Benzidine	92-87-5	µg/L	Grab
61	Benzo(a)Pyrene	50-32-8	µg/L	Grab
63	Benzo(ghi)Perylene	191-24-2	µg/L	Grab
64	Benzo(k)Fluoranthene	207-08-9	µg/L	Grab
65	Bis (2-Chloroethoxy) Methane	111-91-1	µg/L	Grab
66	Bis (2-Chloroethyl) Ether	111-44-4	µg/L	Grab
67	Bis (2-Chloroisopropyl) Ether	108-60-1	µg/L	Grab
68	Bis(2-Ethylhexyl) Phthalate	117-81-7	µg/L	Grab
70	Butylbenzyl Phthalate	85-68-7	µg/L	Grab
73	Chrysene	218-01-9	µg/L	Grab
81	Di-n-butyl Phthalate	84-74-2	µg/L	Grab
84	Di-n-Octyl Phthalate	117-84-0	µg/L	Grab
74	Dibenzo(a,h)anthracene	53-70-3	µg/L	Grab
79	Diethyl Phthalate	84-66-2	µg/L	Grab
80	Dimethyl Phthalate	131-11-3	µg/L	Grab
86	Fluoranthene	206-44-0	µg/L	Grab
87	Fluorene	86-73-7	µg/L	Grab
88	Hexachlorobenzene	118-74-1	µg/L	Grab
89	Hexachlorobutadiene	87-68-3	µg/L	Grab

CTR Number	Semi-Volatile Organic Parameters	CAS Number	Units	Effluent Sample Type
90	Hexachlorocyclopentadiene	77-47-4	µg/L	Grab
91	Hexachloroethane	67-72-1	µg/L	Grab
92	Indeno(1,2,3-cd) Pyrene	193-39-5	µg/L	Grab
93	Isophorone	78-59-1	µg/L	Grab
98	N-Nitrosodiphenylamine	86-30-6	µg/L	Grab
96	N-Nitrosodimethylamine	62-75-9	µg/L	Grab
97	N-Nitrosodi-n-Propylamine	621-64-7	µg/L	Grab
94	Naphthalene	91-20-3	µg/L	Grab
95	Nitrobenzene	98-95-3	µg/L	Grab
53	Pentachlorophenol (PCP)	87-86-5	µg/L	Grab
99	Phenanthrene	85-01-8	µg/L	Grab
54	Phenol	108-95-2	µg/L	Grab
100	Pyrene	129-00-0	µg/L	Grab

INORGANICS

CTR Number	Inorganic Parameters	CAS Number	Units	Effluent Sample Type
NL	Aluminum, Total	7429-90-5	µg/L	24-hour Composite
1	Antimony, Total	7440-36-0	µg/L	24-hour Composite
2	Arsenic, Total	7440-38-2	µg/L	24-hour Composite
15	Asbestos	1332-21-4	µg/L	24-hour Composite
3	Beryllium, Total	7440-41-7	µg/L	24-hour Composite
4	Cadmium, Total	7440-43-9	µg/L	24-hour Composite
5a (III)	Chromium, Total	7440-47-3	µg/L	24-hour Composite
6	Copper, Total	7440-50-8	µg/L	24-hour Composite
NL	Iron, Total	7439-89-6	µg/L	24-hour Composite
7	Lead, Total	7439-92-1	µg/L	24-hour Composite
8	Mercury, Total	7439-97-6	ng/L	24-hour Composite
NL	Methylmercury	22967-92-6	ng/L	24-hour Composite
NL	Manganese, Total	7439-96-5	µg/L	24-hour Composite
9	Nickel, Total	7440-02-0	µg/L	24-hour Composite
10	Selenium, Total	7782-49-2	µg/L	24-hour Composite
11	Silver, Total	7440-22-4	µg/L	24-hour Composite
12	Thallium, Total	7440-28-0	µg/L	24-hour Composite
13	Zinc, Total	7440-66-6	µg/L	24-hour Composite

NON-METALS/MINERALS

CTR Number	Non-Metal/Mineral Parameters	CAS Number	Units	Effluent Sample Type
NL	Boron, Total	7440-42-8	µg/L	24-hour Composite
NL	Chloride	16887-00-6	mg/L	24-hour Composite
14	Cyanide, Total (as CN)	57-12-5	µg/L	Grab
NL	Phosphorus, Total (as P)	7723-14-0	mg/L	24-hour Composite
NL	Sulfate	14808-79-8	mg/L	24-hour Composite
NL	Sulfide (as S)	5651-88-7	mg/L	Grab

PESTICIDES/PCBs/DIOXINS

CTR Number	Pesticide/PCB/Dioxin Parameters	CAS Number	Units	Effluent Sample Type
110	4,4-DDD	72-54-8	µg/L	24-hour Composite
109	4,4-DDE	72-55-9	µg/L	24-hour Composite
108	4,4-DDT	50-29-3	µg/L	24-hour Composite
112	alpha-Endosulfan	959-98-8	µg/L	24-hour Composite
103	alpha-BHC (Benzene hexachloride)	319-84-6	µg/L	24-hour Composite
102	Aldrin	309-00-2	µg/L	24-hour Composite
113	beta-Endosulfan	33213-65-9	µg/L	24-hour Composite
104	beta-BHC (Benzene hexachloride)	319-85-7	µg/L	24-hour Composite
107	Chlordane	57-74-9	µg/L	24-hour Composite
106	delta-BHC (Benzene hexachloride)	319-86-8	µg/L	24-hour Composite
111	Dieldrin	60-57-1	µg/L	24-hour Composite
114	Endosulfan Sulfate	1031-07-8	µg/L	24-hour Composite
115	Endrin	72-20-8	µg/L	24-hour Composite
116	Endrin Aldehyde	7421-93-4	µg/L	24-hour Composite
117	Heptachlor	76-44-8	µg/L	24-hour Composite
118	Heptachlor Epoxide	1024-57-3	µg/L	24-hour Composite
105	gamma-BHC (Benzene hexachloride or Lindane)	58-89-9	µg/L	24-hour Composite
119	Polychlorinated Biphenyl (PCB) 1016	12674-11-2	µg/L	24-hour Composite
120	PCB 1221	11104-28-2	µg/L	24-hour Composite
121	PCB 1232	11141-16-5	µg/L	24-hour Composite
122	PCB 1242	53469-21-9	µg/L	24-hour Composite
123	PCB 1248	12672-29-6	µg/L	24-hour Composite
124	PCB 1254	11097-69-1	µg/L	24-hour Composite
125	PCB 1260	11096-82-5	µg/L	24-hour Composite
126	Toxaphene	8001-35-2	µg/L	24-hour Composite
16	2,3,7,8-TCDD (Dioxin)	1746-01-6	pg/L	Grab

CONVENTIONAL PARAMETERS

CTR Number	Conventional Parameters	CAS Number	Units	Effluent Sample Type
NL	pH	--	SU	Continuous
NL	Temperature	--	ºC	Continuous

NON-CONVENTIONAL PARAMETERS

CTR Number	Nonconventional Parameters	CAS Number	Units	Effluent Sample Type
NL	Foaming Agents (MBAS)	MBAS	mg/L	24-hour Composite
NL	Hardness (as CaCO3)	471-34-1	mg/L	24-hour Composite
NL	Specific Conductance (Electrical Conductivity or EC)	EC	µmhos /cm	24-hour Composite
NL	Total Dissolved Solids (TDS)	TDS	mg/L	24-hour Composite
NL	Dissolved Organic Carbon (DOC)	DOC	mg/L	24-hour Composite

NUTRIENTS

CTR Number	Nutrient Parameters	CAS Number	Units	Effluent Sample Type
NL	Ammonia (as N)	7664-41-7	mg/L	24-hour Composite
NL	Nitrate plus Nitrite (as N)	14797-55-8	mg/L	24-hour Composite

OTHER CONSTITUENTS OF CONCERN

CTR Number	Other Constituents of Concern	CAS Number	Units	Effluent Sample Type
NL	Trichlorofluoromethane	75-69-4	µg/L	Grab
NL	Xylenes	1330-20-7	µg/L	Grab
NL	Barium, Total	7440-39-3	µg/L	24-hour Composite
NL	Fluoride	16984-48-8	mg/L	24-hour Composite
NL	Molybdenum, Total	7439-98-7	µg/L	24-hour Composite
NL	Atrazine	1912-24-9	µg/L	Grab
NL	Carbofuran	1563-66-2	µg/L	Grab
NL	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	µg/L	Grab
NL	Simazine (Princep)	122-34-9	µg/L	Grab
NL	Chlorpyrifos	2921-88-2	µg/L	Grab
NL	Diazinon	333-41-5	µg/L	Grab

6. **Table E-11 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-11.

   a. The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month, as required in Table E-3 or the Pretreatment Program requirements per Attachment E, section X.D.4.a, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.

   b. All **24-hour composite** samples shall be collected from a 24-hour flow proportional composite.

   c. **Bis(2-ethylhexyl)phthalate**. In order to verify if bis(2-ethylhexyl)phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

   d. **Pesticides and PCBs.** N-Nitrosodimethylamine, 4,4-DDD, 4,4-DDE, 4,4-DDT, alpha-Endosulfan, alpha-BHC (Benzene hexachloride), Aldrin, beta-Endosulfan, beta-BHC (Benzene hexachloride), Chlordane, delta-BHC (Benzene hexachloride), Dieldrin, Endosulfan Sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, gamma-BHC (Benzene hexachloride or Lindane), Polychlorinated Biphenyl (PCB) 1016, PCB 1221, PCB 1232, PCB 1242, PCB 1248, PCB 1254, PCB 1260, Toxaphene, Atrazine, Carbofuran, 1,2-Dibromo-3-chloropropane (DBCP), and Simazine (Princep) are only required to be sampled quarterly during the characterization monitoring.

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, except that Effluent and Receiving Water Characterization monitoring required in section IX.C may be submitted as separate reports, as specified in this MRP. 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 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-12. 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
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 AMEL or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

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

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

   b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the 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 final laboratory reports from all contracted commercial laboratories, excluding the Discharger's own laboratory, 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. **Calendar Annual Average Limitations**. For constituents with effluent limitations specified as "calendar annual average" (electrical conductivity) the Discharger shall report the calendar annual average in the December SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.

b. **Mass Loading Limitations**. For ammonia, BOD_5, and TSS, the Discharger shall calculate and report the average weekly and average monthly mass loading (lbs/day) in the SMR's, and for nitrate+nitrite, the Discharger shall calculate and report the average monthly mass loading (lbs/day) in the SMR's. The mass loading shall be calculated as follows:

Mass Loading (lbs/day) = Total Flow (million gallons) x Concentration (mg/L) x 8.34 divided by Period Length (days)

The weekly average constituent concentration and total weekly flow shall be used for average weekly mass loading. The monthly average constituent concentration and total monthly flow shall be used for average monthly mass loading.

c. **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 Discharge Requirements.

d. **Total Coliform Organisms Effluent Limitations**. Prior to the effective date of Special Provision VI.C.6.a, the Discharger shall calculate and report the weekly median total coliform organisms for the effluent. Upon the effective date of Special Provision VI.C.6.a, for May through October, the Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent, and for November through April, the Discharger shall calculate and report the weekly median and monthly median of total coliform organisms for the effluent. The weekly median, 7-day median, and monthly median of total coliform organisms shall be calculated as specified in section VII.D of the Waste Discharge Requirements.

e. **Total Calendar Annual Mass Loading Mercury Effluent Limitations.** The Discharger shall calculate and report the total calendar annual mercury mass loading for the effluent in the December SMR. The total calendar year annual mass loading shall be calculated as specified in section VII.B of the Waste Discharge Requirements.

f. **Temperature Effluent Limitations**. For every day receiving water temperature samples are collected at Monitoring Location RSWU-001, the Discharger shall calculate and report the difference between the effluent temperature and upstream receiving water temperature based on the difference in the effluent temperature at Monitoring Location EFF-001 and receiving water temperature of grab samples collected at Monitoring Location RSWU-001. The effluent temperature shall be taken from the continuous effluent data for the same time that the river grab sample was collected.

g. **Chlorpyrifos and Diazinon Effluent Limitations.** The Discharger shall calculate and report the value of S_{AMEL} and S_{MDEL} for the effluent, using the equation in Effluent Limitations IV.A.1.g and consistent with the Compliance Determination Language in section VII.I of the Waste Discharge Requirements.

h. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall report monthly in the SMR the dissolved oxygen concentrations in the effluent (Monitoring Location EFF-001) and the receiving water (Monitoring Locations RSWU-001 and RSWD-003).

i. **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.17.a-e of the Waste Discharge Requirements.

j. **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 RSWU-001 and RSWD-003.

k. **Effluent Diversions.** The Discharger shall submit an annual summary of effluent diversions to include date, time, duration and reason(s) for the diversion with the annual SMR.

C. Discharge Monitoring Reports (DMR's)

1. 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

(http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/) is available on the Internet.

D. Other Reports

1. **Analytical Methods Report.** The Discharger shall complete and submit an Analytical Methods Report, electronically via CIWQS submittal, by the due date shown in the Technical Reports Table. The Analytical Methods Report shall include the following for each constituent to be monitored in accordance with this Order: 1) applicable water quality objective, 2) RL, 3) MDL, and 4) analytical method. The analytical methods shall be sufficiently sensitive with RL's consistent with the SSM Rule per 40 C.F.R. sections 122.21(e)(3) and 122.44(i)(1)(iv), and with the ML's in the SIP, Appendix 4. The "Reporting Level or RL" is synonymous with the "Method Minimum Level" described in the SSM Rule. If an RL is not less than or equal to the applicable water quality objective for a constituent, the Discharger shall explain how the proposed analytical method complies with the SSM Rule, as detailed in Attachment E, Section I.F. Central Valley Water Board staff will provide a tool with the permit's Notice of Adoption to assist the Discharger in completing this requirement. The tool will include the constituents and associated applicable water quality objectives to be included in the Analytical Methods Report.

2. **Annual Operations Report.** The Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing the following by the due date in the Technical Reports Table:

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

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

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

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

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

3. **Report of Waste Discharge (ROWD).** For the 5-year permit renewal, the Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing, at minimum, the following by the due date in the Technical Reports Table.

   a. Report of Waste Discharge (Form 200);

   b. NPDES Form 2A;

   c. NPDES Form 2S;

   d. **Salinity Evaluation and Minimization Plan.** The Discharger shall evaluate the effectiveness of the salinity evaluation and minimization plan and provide a summary with the Report of Waste Discharge;

   e. **Mixing Zone Requests.** A mixing zone analysis for constituents the Discharger is requesting the continuation of dilution credits and mixing zones in the calculation of water quality-based effluent limits; and

   f. **Thermal Plan Exception Requests.** To continue Thermal Plan exceptions the Discharger shall submit updated Thermal Plan exception requests with the ROWD.

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 the due date shown in the Technical Reports Table and include at least the following items:

   a. A summary of analytical results from representative sampling of the POTW's influent and effluent for those pollutants U.S. EPA has identified under section 307(a) of the CWA which are known or suspected to be discharged by nondomestic users. Annually, this will consist of an initial full priority pollutant scan (see Appendix A to 40 C.F.R. part 423) during the first quarter, and quarterly samples analyzed only for those priority pollutants detected in the initial full scan. The sample types for each priority pollutant shall be consistent with the sample types specified in Table E-11 (Effluent Characterization Monitoring). 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.

b. A discussion of upset, interference, or pass-through incidents, if any, at the treatment plant, 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 SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIUs, 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. Semi-annual reports describing the compliance status of each SIU characterized by the descriptions in items i through vii above shall be submitted by **1 August** for period covering 1 January through 30 June, and by **25 March** (i.e., included as part of the annual report) for period covering 1 July through 31 December. The reports shall identify the specific compliance status of each such SIU and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the covered period must be submitted. This semi-annual reporting requirement shall commence upon issuance of this Order.

g. 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.

h. 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 a 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;

   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; and

xi. Disconnection from discharge to the POTW.

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

j. A brief description of any significant changes in operating the pretreatment program which 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;

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

l. 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 submitted electronically to the Central Valley Water Board via CIWQS submittal and the:

State Water Resources Control Board
NPDESWastewater@waterboards.ca.gov
and the
U.S. EPA Region 9 Pretreatment Coordinator
R9Pretreatment@epa.gov

5. **Filtration Operations Summary Reports.** Effective 9 May 2023, the Discharger shall, on a monthly basis, submit a summary report with the monthly Self-Monitoring Reports using existing data demonstrating operations consistent with the future Facility description with respect to operation of filtration facilities in section II.A.2 of the Fact Sheet and the Seasonal Operation Plan required in the Technical Reports Table, as part of the compliance schedule for seasonal Title 22, or equivalent, disinfection requirements described in WDR section VI.C.7.a.

6. **Technical Report Submittals.** This Order includes requirements to submit a ROWD, special study technical reports, progress reports, and other reports identified in the MRP (hereafter referred to collectively as "technical reports"). The Technical Reports Table and subsequent table notes below summarize all technical reports required by this Order and the due dates for submittal. All

technical reports shall be submitted electronically via CIWQS submittal. Technical reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment.

Table E-13. Technical Reports

Report #	Technical Report	Due Date	CIWQS Report Name
Intentionally left blank	Standard Reporting Requirements	Intentionally left blank	Intentionally left blank
1	Report of Waste Discharge	1 June 2025	MRP X.D.3
2	Analytical Methods Report	21 June 2021	MRP X.D.1
3	Analytical Methods Report Certification	1 October 2023	MRP IX.C.4
4	Annual Operations Report	1 February 2022	MRP X.D.3
5	Annual Operations Report	1 February 2023	MRP X.D.3
6	Annual Operations Report	1 February 2024	MRP X.D.3
7	Annual Operations Report	1 February 2025	MRP X.D.3
8	Annual Operations Report	1 February 2026	MRP X.D.3
Intentionally left blank	Compliance Schedule for Seasonal Title 22, or Equivalent, Disinfection Requirements, WDR section VI.C.7.a	Intentionally left blank	Intentionally left blank
14	Seasonal Title 22, or Equivalent, Disinfection Requirements Annual Progress Reports	9 July 2021	WDR VI.C.7.a
15	Seasonal Title 22, or Equivalent, Disinfection Requirements Annual Progress Reports	9 July 2022	WDR VI.C.7.a
16	Seasonal Operations Plan (see table note 1. below.)	9 April 2023	WDR VI.C.7.a
17	Notification of Full Compliance with Seasonal Title 22, or Equivalent, Disinfection Requirements, WDR section VI.C.7.a Signed by Legally Responsible Official (LRO)	9 May 2023	WDR VI.C.7.a

Report #	Technical Report	Due Date	CIWQS Report Name
Intentionally left blank	Compliance Schedule for Final Effluent Limitations for Methylmercury WDR section VI.C.7.b	Intentionally left blank	Intentionally left blank
18	Notification of Full Compliance with Final Effluent Limitations for Methylmercury WDR section VI.C.7.b Signed by LRO	31 December 2030	WDR VI.C.7.b
Intentionally left blank	Compliance Schedule for Final Effluent Limits for Chronic WET, WDR section VI.C.7.c	Intentionally left blank	Intentionally left blank
19	Chronic WET Annual Progress Reports. The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, progress of biological nutrient removal and tertiary filtration upgrades, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.	9 July 2022	WDR VI.C.7.c
20	Chronic WET Annual Progress Reports	9 July 2023	WDR VI.C.7.c
21	Chronic WET Annual Progress Reports	9 July 2024	WDR VI.C.7.c
22	Chronic WET Annual Progress Reports	9 July 2025	WDR VI.C.7.c
23	Notification of Full Compliance with Final Effluent Limits for Chronic WET, WDR section VI.C.7.c Signed by LRO	1 May 2026	WDR VI.C.7.c
Intentionally left blank	Other Reports	Intentionally left blank	Intentionally left blank
24	Annual Pretreatment Report	25 March 2022	MRP X.D.4
25	Semi-Annual SIU Compliance Status Reports	1 August 2021	MRP X.D.4.f
26	Annual Pretreatment Report	25 March 2023	MRP X.D.4

Report #	Technical Report	Due Date	CIWQS Report Name
27	Semi-Annual SIU Compliance Status Reports	1 August 2022	MRP X.D.4.f
28	Annual Pretreatment Report	25 March 2024	MRP X.D.4
29	Semi-Annual SIU Compliance Status Reports	1 August 2023	MRP X.D.4.f
30	Annual Pretreatment Report	25 March 2025	MRP X.D.4
31	Semi-Annual SIU Compliance Status Reports	1 August 2024	MRP X.D.4.f
32	Annual Pretreatment Report	25 March 2026	MRP X.D.4
33	Semi-Annual SIU Compliance Status Reports	1 August 2025	MRP X.D.4.f

Table E-13 Notes:

1. The Seasonal Operations Plan shall incorporate as a goal to reasonably limit the amount of unfiltered discharge and describe anticipated operations of the Facility when flows in excess of filter design capacity occur considering influent flows to the entire Facility, available storage, river flows, impending meteorological conditions, and any other relevant operational considerations. This plan will be periodically updated, as necessary, based on accumulated operating data and experience.

ATTACHMENT F – FACT SHEET

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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

Waste Discharge ID:	5A340108002
CIWQS Facility Place ID:	254981
Discharger:	Sacramento Regional County Sanitation District
Name of Facility:	Sacramento Regional Wastewater Treatment Plant
Facility Address:	8521 Laguna Station Road
Facility City, State Zip:	Elk Grove, CA 95758
Facility County:	Sacramento County
Facility Contact, Title and Phone Number:	Glenn Bielefelt, Director of Operations, (916) 875-9000
Authorized Person to Sign and Submit Reports:	Prabhakar Somavarapu, District Engineer, (916) 876-6048
Mailing Address:	10060 Goethe Road, Sacramento, CA 95827
Billing Address:	Same as Mailing Address
Type of Facility:	Publicly Owned Treatment Works (POTW)
Major or Minor Facility:	Major
Threat to Water Quality:	1
Complexity:	A
Pretreatment Program:	Yes
Recycling Requirements:	Producer (Master Reclamation Permit 97-146)

Facility Permitted Flow:	181 million gallons per day (MGD), average dry weather flow
Facility Design Flow:	181 MGD, average dry weather flow
Watershed:	Sacramento-San Joaquin Delta
Receiving Water:	Sacramento River
Receiving Water Type:	Estuary

A. Sacramento Regional County Sanitation District (hereinafter Discharger) is the owner and operator of the Sacramento Regional Wastewater Treatment Plant (hereinafter Facility), a POTW.

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

B. The Facility discharges wastewater to the Sacramento River, a water of the United States within the Sacramento-San Joaquin Delta. The Discharger was previously regulated by Order R5-2016-0020-01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0077682 adopted on 21 April 2016 and amended on 2 August 2018, with an expiration date of 31 May 2021. 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 2 July 2020. The application was deemed complete on 3 December 2020.

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. Under 40 C.F.R. section 122.6(d), states authorized to administer the NPDES program may administratively continue state-issued permits beyond their expiration dates until the effective date of the new permits, if state law allows it. Pursuant to California Code of Regulations (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 wastewater treatment service to the Cities of Sacramento, Folsom, and West Sacramento, the communities of Courtland and Walnut Grove, and the Sacramento Area Sewer District. The Sacramento Area Sewer District service area includes the Cities of Elk Grove, Rancho Cordova, Citrus Heights, as well as portions of the unincorporated areas of Sacramento County. The population served is approximately 1.61 million people. The design average dry weather flow capacity of the Facility is 181 MGD.

The Discharger owns and operates the main trunk lines/interceptors feeding the Facility. The smaller diameter collection systems are owned and operated by the various contributing agencies and not by the Discharger and are regulated under State Water Board Order 2006-0003-DWQ, Statewide General WDR's for Sanitary Sewer Systems, effective November 2006.

The City of Sacramento operates both a separate sewer collection system and a combined (storm water and wastewater) collection system. During wet weather the Facility is contracted to accept up to 60 MGD of wastewater and storm runoff from the downtown Sacramento combined collection system. Combined collection flows in excess of 60 MGD are managed by the Combined Wastewater Collection and Treatment System (CWCTS) operated by the City of Sacramento. The CWCTS discharge is governed by WDR Order R5-2015-0045 issued to the City of Sacramento. Depending on treatment and conveyance capacity, flow in excess of 60 MGD may be received at the Facility.

The Facility discharges to the Sacramento River just downstream of the Freeport Bridge via an outfall diffuser. The outfall diffuser is approximately 300 feet long with 74 ports and is placed perpendicular to the river flow. At times, the river flows in the reverse direction northeast towards the City of Sacramento, due to tidal activity during low river flows. The Discharger diverts its discharge to emergency storage basins whenever these conditions exist. The Discharger has determined in studies that river flows of at least 1,300 cubic feet per second (cfs) and providing a flow ratio of at least 14 to 1 (river to effluent) are required to allow for adequate mixing of the effluent through the outfall diffuser.

The Discharger currently provides up to 5.0 MGD of treated wastewater to the Water Reclamation Facility (WRF) for unrestricted use, with a provision for WRF expansion to 10 MGD. Expansion beyond 10 MGD is anticipated in the future. The WRF is regulated under Master Reclamation Permit No. 97-146.

A. Description of Wastewater and Biosolids Treatment and Controls

1. **Existing Facility.** The Facility is staffed and operated 24 hours per day and the liquid treatment process consists of influent pumps, a septage receiving station, mechanical bar screening, aerated grit handling, grit classifiers that wash and dewater grit, covered primary sedimentation tanks, pure oxygen biological treatment by activated sludge, secondary sedimentation, nitrifying sidestream treatment for ammonia removal, disinfection with sodium hypochlorite, and dechlorination with sodium bisulfite. The Facility has partially-constructed and

partially-operating Primary Effluent Pump Station (PEPS) and Biological Nutrient Removal facilities. Effluent can be diverted to lined emergency storage basins (ESB's), as needed, to meet effluent dilution, thermal, and disinfection requirements or divert excess flows. Odors are controlled through stripping towers and carbon treatment.

2. **Future Facility.** Based on information provided by the Discharger, the Facility will be modified in order to comply with certain requirements in this Order, consistent with the applicable compliance deadlines. The future Facility and operation is as follows, and differs seasonally.

   The design capacity of the future Facility will remain 181 MGD. Facility modification will include replacement of the existing pure oxygen biological treatment facilities with biological nutrient removal (BNR) air activated treatment facilities capable of removing ammonia and nitrate nitrogen, addition of tertiary treatment in the form of filtration with granular media filters, and the increase in the storage capacity. The Facility will continue to be staffed and operated 24 hours per day and will consist of influent pumps, septage receiving station, anaerobically digested material reception and storage facility, mechanical bar screening, aerated grit handling, grit classifiers that wash and dewater grit, covered primary sedimentation tanks, primary effluent pumping station and peak-shaving storage facilities, BNR air activated sludge treatment, nitrifying sequencing batch reactor for treating high ammonia concentration waste streams from solids storage basins and biosolids reclamation facility, secondary sedimentation, secondary effluent screen, filter influent pumping station, granular media filtration, disinfection with chlorine liquid in a covered disinfection contact basin, and dechlorination with sodium bisulfite. Compliant effluent can be diverted to the lined ESB's, as needed, to meet effluent dilution and thermal limits before discharge to the Sacramento River. Non-compliant effluent, primary influent or effluent, and raw wastewater can be diverted to the lined ESB's for any reason, including process upsets, or diversions for excess flows, and returned to the Facility influent for additional treatment. Odors are to be controlled through biological fixed media scrubbers, scrubbing tower, chemical oxidizing towers, and carbon treatment towers.

   The BNR activated sludge treatment facilities will be designed to process up to 330 MGD. Flows in excess of 330 MGD will be stored in peak-shaving storage facilities (ESB's) and returned for processing through the BNR facilities when capacity is available. All wastewater will receive secondary treatment through the BNR facilities. The tertiary filters will be designed to process flows up to 217 MGD, measured as a daily average. This Order requires seasonal disinfection requirements and the Facility will be operated differently during each season, as follows:

   a. **1 May – 31 October.** The Facility will be operated to meet Title 22 or equivalent disinfection criteria, as described in Special Provision VI.C.6.a.

b. **1 November – 30 April** (commencing 1 November 2023):

In the descriptions below, "filtered" means tertiary filtration of BNR effluent under filter operations consistent with the design hydraulic loading rate necessary to comply with the Title 22, or equivalent, disinfection criteria.

i. When the BNR effluent flow is 217 MGD, or less, measured as a daily average, the entire BNR effluent flow will be filtered.

ii. When the BNR effluent flow exceeds 217 MGD, up to 217 MGD will be filtered and the remaining wastewater will not be filtered. A portion of the filtered effluent may be reclaimed. The remaining filtered and non-filtered wastewater will be disinfected and combined with reclaimed water in excess of demands, prior to the dechlorination facilities.

3. **Biosolids Treatment.** Solids are thickened by dissolved air flotation and gravity belt thickeners. Primary and secondary sludge is mixed. Fats, oils, and grease from the FOG receiving station may be mixed to the waste and the mixed waste is sent to anaerobic digesters for approximately 15 days or more, stored at the sludge stabilization basins for 3 to 5 years, then harvested and injected into dedicated lined land disposal sites. Some biosolids are recycled with the Synagro Organic Fertilizer Company and the Discharger can dispose of biosolids at the Keifer Landfill as an emergency disposal option. Separate WDR's (Order R5-2015-0133), in conformance with California Code of Regulations (CCR), Title 27, division 2, subdivision 1, regulate the biosolids and solids storage and disposal facilities, the Class II dedicated land treatment units, unclassified solids storage basins, and the Class III grit and screening landfill closure. When the treatment plant upgrades are complete, biosolids treatment and disposal will remain unchanged.

4. **Groundwater Corrective Action Plan (CAP).** The Discharger initiated a CAP in December 1995 and is currently regulated under WDR Order R5-2015-0133. The CAP is to address elevated constituent concentrations that were observed in samples from groundwater monitoring wells down gradient of the dedicated land disposal areas (DLD's) and the Class III landfill when compared to upgradient groundwater monitoring wells. Extraction wells are used for hydraulic control of the site. Characterization of the groundwater aquifer is documented in the reports submitted twice annually pursuant to WDR Order R5-2015-0133. The Discharger conveys the extracted groundwater from the CAP extraction wells, at an average pumping rate of approximately 0.4 MGD, to either the Facility effluent channel downstream of the secondary clarifiers and upstream of the plant chlorination station, or onsite constructed wetlands. Discharging water from the CAP system downstream of the secondary clarifiers is acceptable and does not decrease the amount of treatment as the treatment processes upstream of the discharge point are not designed for removal of the CAP discharge constituents of concern. Furthermore, based on the extracted

groundwater sampling, estimates of CAP discharge constituent concentrations are either below current Facility effluent concentrations or do not have a reasonable potential to violate water quality objectives in the receiving water. Based on these considerations, the Central Valley Water Board finds disposal of CAP discharge as described above to be acceptable. The CAP discharge was modified in 2016 to either redirect flows to wetlands or return flows to the Facility influent rather than continue to discharge to the secondary effluent channel.

B. Discharge Points and Receiving Waters

1. The Facility is located in section 19, T7N, R5E, 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 within the legal boundary of the Sacramento-San Joaquin Delta, at a point latitude 38° 27’ 15” N and longitude 121° 30’ 00” W.

3. The Facility and Discharge Point 001 are located near the community of Freeport, south of the City of Sacramento.

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

Effluent limitations contained in Order R5-2016-0020-01 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2016-0020-01 are as follows:

Table F-2. Historic Effluent Limitations

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	MDEL 181 (see table note 1. below)	--	--	279 (see table note 2. below)
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L (see table note 3. below)	AMEL 30 AWEL 45 MDEL 60	14	25	47
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L (see table note 4. below)	AMEL 10 AWEL 15 MDEL 20	--	--	--
Biochemical Oxygen Demand (5-day @ 20°C)	lbs/day (see table notes 3. and 5. below)	AMEL 45,286 AWEL 67,929 MDEL 90,572	19,517	43,615	86,392

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Biochemical Oxygen Demand (5-day @ 20°C)	lbs/day (see table notes 4. and 5. below)	AMEL 15,100 AWEL 22,700 MDEL 30,200	--	--	--
Biochemical Oxygen Demand (5-day @ 20°C)	% Removal	AMEL 85	94 (see table note 6. below)	--	--
pH	standard conditions	Instantaneous Max 6.0 Instantaneous Min 8.0	--	--	6.0 – 7.9
Total Suspended Solids	mg/L (see table note 3. below)	AMEL 30 AWEL 45 MDEL 60	14.3	22.9	59
Total Suspended Solids	mg/L (see table note 4. below)	AMEL 10 AWEL 15 MDEL 20	--	--	--
Total Suspended Solids	lbs/day (see table notes 3. and 5. below)	AMEL 45,286 AWEL 67,929 MDEL 90,572	16,299	32,529	115,662
Total Suspended Solids	lbs/day (see table notes 4. and 5. below)	AMEL 15,100 AWEL 22,700 MDEL 30,200	--	--	--
Total Suspended Solids	% Removal	AMEL 85	94 (see table note 6. below)	--	--
Bis(2-Ethylhexyl)Phthalate	µg/L	AMEL 8.9 MDEL 20	2.9	--	2.9
Carbon Tetrachloride	µg/L	AMEL 2.9 MDEL 5.3	Non-Detect	--	Non-Detect
Chlorodibromomethane	µg/L	AMEL 14 MDEL 27	0.30	--	0.30
Copper, Total	µg/L	AMEL 8.6 MDEL 12	17	--	17
Cyanide, Total (as CN)	µg/L	AMEL 13 MDEL 22	7.5	--	7.5
Dichlorobromomethane	µg/L	AMEL 23 MDEL 36	1.7	--	1.7
Mercury, Total	grams/year	AMEL 1,043 (see table note 7. below)	537 (see table note 8. below)	--	--
Methylene Chloride	µg/L	AMEL 4.7 MDEL 11	1.0	--	1.0

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Ammonia Nitrogen, Total (as N)	mg/L (see table note 9. below)	AMEL 39 AWEL 43 MDEL 47	35	37	43
Ammonia Nitrogen, Total (as N)	mg/L (see table notes 10. and 11. below)	AMEL 1.5 AWEL 1.7	--	--	--
Ammonia Nitrogen, Total (as N)	mg/L (see table notes 10. and 12. below)	AMEL 2.4 AWEL 3.0	--	--	--
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 9. and 13. below)	AMEL 49,400 AWEL 52,920 MDEL 67,929	35,927	40,220	53,126
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 5., 10., and 11. below)	AMEL 2,264 AWEL 2,566	--	--	--
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 5., 10., and 12. below)	AMEL 2,622 AWEL 4,529	--	--	--
Chlorine, Total Residual	mg/L (see table note 14. below)	AMEL 0.011 MDEL 0.018	Non-Detect	--	0.0080
Chlorine, Total Residual	mg/L (see table note 15. below)	AWEL 0.011 (see table note 16. below) MDEL 0.019 (see table note 17. below)	--	--	--
Chlorpyrifos	µg/L	(see table notes 18. and 19. below)	Non-Detect	--	Non-Detect
Diazinon	µg/L	(see table notes 18. and 19. below)	Non-Detect	--	Non-Detect
Electrical Conductivity @ 25°C	µmhos/cm	AMEL 1,139 (see table note 20. below)	1,057 (see table note 21. below)	--	--
Methylmercury	grams/year	AMEL 89 (see table note 22. below)	--	--	--
Temperature	°F (see table note 23. below)	(see table note 24. below)	--	--	--

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Temperature	°F (see table note 25. below)	(see table note 26. below)	--	--	24.2 (see table note 27. Below)
Total Coliform Organisms	MPN/100 mL (see table note 28. below)	AWEL 23 (see table note 29. below) MDEL 500 (see table note 30. below)	--	--	1,600
Total Coliform Organisms	MPN/100 mL (see table notes 31. and 32. below)	AMEL 2.2 (see table note 33. below) AWEL 23 (see table note 34. below) MDEL 240 (see table note 35. below)	--	--	--
Total Coliform Organisms	MPN/100 mL (see table notes 31. and 36. below)	AMEL 2.2 (see table note 37. below) AWEL 23 (see table note 29. below) MDEL 240 (see table note 35. below)	--	--	--
Acute Toxicity	% Survival	MDEL 70/90 (see table notes 38. and 39. below)	--	--	0 (see table note 40. and 41. below)
Chronic Toxicity	TUc	(see table note 42. below)	--	--	>16

Table F-2 Notes:

1. The historic effluent limitation of 181 MGD is applied as an average dry weather flow effluent limitation.

2. Represents the maximum observed daily flow. The Facility receives over 400 MGD during wet weather conditions.

3. Interim effluent limitations for 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), effective until 8 May 2023.

4. Final effluent limitations for BOD_5 and TSS, effective 9 May 2023.

5. Based on an average dry weather flow of 181 MGD. Mass effluent limitations do not apply if the effluent flow exceeds the permitted average dry weather flow during wet-weather seasons (see Waste Discharge Requirements Section VII.F for compliance determination language).

6. Represents the minimum reported percent removal.

7. Interim annual mass loading effluent limitation, effective until 31 December 2030.

8. Represents the maximum total calendar annual mass load.

9. Interim effluent limitations for ammonia, effective until 10 May 2021.

10. Final effluent limitations for ammonia, effective 11 May 2021.

11. Effluent limitations applicable from 1 April through 31 October.

12. Effluent limitations applicable from 1 November through 31 March.

13. Interim mass-based effluent limitations for ammonia are based on interim concentration-based limits included in previous Order R5-2010-0114-02 and an average dry weather flow of 181 MGD.

14. Interim effluent limitations for total residual chlorine, effective until 30 November 2020.

15. Final effluent limitations for total residual chlorine, effective 1 December 2020.

16. Applied as a 4-day average effluent limitation.

17. Applied as a 1-hour average effluent limitation.

18. Average Monthly Effluent Limitation (AMEL):

$$S_{AMEL} = C_{D\ M\text{-}avg}/0.079 + C_{C\ M\text{-}avg}/0.012 \leq 1.0$$

Where:

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

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

19. Average Weekly Effluent Limitation (AWEL):

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

    Where:

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

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

20. Applied as an annual average effluent limitation.

21. Represents the maximum observed annual average concentration.

22. Final annual mass loading effluent limitation effective 31 December 2030.

23. Interim effluent limitations for temperature, effective until State Water Board concurrence with the Discharger's Thermal Plan exception request.

24. The maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F.

25. Final effluent limitations for temperature, effective upon State Water Board concurrence with the Discharger's Thermal Plan exception request.

26. The maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

27. Reflects the maximum difference between the effluent temperature measured at Monitoring Location EFF-001 and the temperature of the receiving water measured at Monitoring Location RSWU-001.

28. Interim effluent limitations for total coliform organisms, effective until 8 May 2023.

29. Applied as a weekly median effluent limitation.

30. Applied as a daily maximum effluent limitation not to be exceeded in any two consecutive days.

31. Final effluent limitations for total coliform organisms, effective 9 May 2023.

32. Effluent limitations applicable from 1 May through 31 October.

33. Applied as a 7-day median effluent limitation.

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

35. Applied as an instantaneous maximum effluent limitation.

36. Effluent limitations applicable from 1 November through 30 April.

37. Applied as a monthly median effluent limitation.

38. Minimum percent survival for any one bioassay.

39. Median percent survival of three consecutive acute bioassays.

40. Represents the minimum observed percent survival.

41. 70% survival was the lowest acceptable test result performed during the previous permit cycle. The Central Valley Water Board did not issue enforcement actions on the 0% survival and several other low % survival as the results were not representative of Facility effluent and an artifact of test conditions (pH drift from static renewal, composite test making ammonia significantly more toxic).

42. There shall be no chronic toxicity in the effluent.

D. Compliance Summary – Not Applicable

E. Planned Changes

As discussed in section II.A.2 of this Fact Sheet, the Discharger is constructing upgrades to the Facility, including replacement of the existing pure oxygen biological treatment facilities with BNR air activated treatment facilities capable of removing ammonia and nitrate nitrogen, addition of tertiary treatment in the form of filtration with granular media filters, and an increase in lined ESB facilities. Construction of the side stream ammonia treatment is complete.

In all, Facility modifications will result in the construction, commissioning, and operation of seven or more new or reconstructed wastewater treatment units: flow equalization, disinfection chemical storage, biological nutrient removal (phase I and phase II), nitrifying side-stream treatment, and tertiary treatment facilities. Biological nutrient removal and nitrifying side-stream treatment are biological treatment processes. The start-up and commissioning period (i.e., period of time necessary for adjusting and testing of new or reconstructed wastewater treatment units) for projects of this size, while maintaining consistent and ongoing treatment operations, is a complex undertaking. It involves the gradual transitioning of wastewater treatment from current plant facilities over to new or reconstructed treatment plant facilities. Prior to start-up and adjustment, the Discharger intends to submit start-up operation plans for the period of adjustment and testing to the Central Valley Water Board for review. The Discharger has indicated that plans will be submitted separately for each of the individual wastewater treatment units and will be submitted in accordance with the schedule for the individual wastewater treatment unit in question. Specifically, such plans will be submitted at least 30 days prior to the period of adjusting and testing that will take place for each individual wastewater

treatment unit. It is anticipated that the period of adjustment and testing may occur over several months to over many months, depending on the wastewater treatment unit. However, potential effluent or other permit violations will likely only occur during certain times of the adjustment and testing period. If the Discharger wishes to apply for protection from Mandatory Minimum Penalties during the start-up periods, then pursuant to Water Code section 13385(j)(1)(D), the Discharger's start-up operations plans must include steps that the Discharger will take to prevent violations and identify the shortest reasonable time required for the period of adjusting and testing that could result in effluent or permit violations. The Central Valley Water Board will work with the Discharger to identify the appropriate steps and actions to be taken to minimize the potential for Mandatory Minimum Penalties.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

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

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

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

    a. **Basin Plan.** The Central Valley Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fifth Edition, May 2018* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Beneficial uses applicable to the

Sacramento River within the Sacramento-San Joaquin Delta are as follows:

Table F-3 Basin Plan Beneficial Uses

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

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

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

c. **Thermal Plan.** The State Water Board adopted the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) on 7 January 1971 and amended this plan on 18 September 1975. The Thermal Plan contains temperature objectives for surface waters.

The Thermal Plan is applicable to the discharge form the Facility. For the purposes of the Thermal Plan, the Discharger is considered to be an Existing Discharger of Elevated Temperature Waste to an Estuary. The

Thermal Plan in section 5.A contains the following temperature objectives for surface waters that are applicable to this discharge:

"*5. Estuaries*

A. Existing dischargers

(1) Elevated temperature waste discharges shall comply with the following:

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

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

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

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

i. **Thermal Plan Exceptions.** The Discharger requested limited exceptions to Thermal Plan Objectives 5A(1)(a) and 5A(1)(b). The Thermal Plan allows regional boards to provide exceptions to specific water quality objectives in the Thermal Plan so long as the exceptions comply with CWA section 316(a) and federal regulations. The applicable exception is promulgated in 40 C.F.R. section 125.73(a), which provides that, "*Thermal discharge effluent limitations or standards established in permits may be less stringent than those required by applicable standards and limitations if the discharger demonstrates to the satisfaction of the director that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. This demonstration must show that the alternative effluent limitation desired by the discharger, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made*." The Thermal Plan requires that the State Water

Board concur with any exceptions prior to them becoming effective.

The Central Valley Water Board has considered the applicability of the Thermal Plan exceptions for the Facility's discharge. Based on all evidence in the record the Central Valley Water Board finds that the Discharger has adequately demonstrated through comprehensive thermal effect studies that the effluent and receiving water limitations based on the Thermal Plan are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. The Central Valley Water Board also finds that the alternative limitations, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish, and wildlife in and on the Sacramento River and Delta. The detailed rationale supporting the Thermal Plan exceptions is provided in Attachment I.

In accordance with 40 C.F.R. section 125.73(a), this Order grants the following exceptions to Thermal Plan objectives 5A(1)(a) and 5A(1)(b):

(a) **Thermal Plan Objective 5A(1)(a) Exception:**

The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than:

25°F from 1 October through 30 April;

and

20°F from 1 May through 30 September

(b) **Thermal Plan Objective 5A(1)(b) Exception:**

If the natural receiving water temperature is less than 65°F, the discharge shall not create a zone, defined by water temperature of more than 2°F above natural temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution.

If the natural receiving water temperature is 65°F or greater, the discharge shall not create a zone, defined by a water temperature of 1°F or more above natural receiving water temperature, which exceeds 25 percent of the cross sectional

area of the River at any point outside the zone of initial dilution for more than one hour per day as an average in any month.

On 14 January 2016, Central Valley Water Board staff provided technical justification for the Thermal Plan exceptions to the State Water Board for their review.(Memorandum from Pamela Creedon, Executive Officer, Central Valley Water Board to Tom Howard, Executive Director, State Water Board, 14 January 2016) The State Water Board adopted Resolution 2016-0036 on 21 June 2016, which provided concurrence with the Central Valley Water Board's action granting the Discharger an exception to the Thermal Plan and adopting the alternative, less stringent thermal effluent and receiving water limitations.

State Water Board Resolution 2016-0036 further states, "*The alternative limitations shall be reviewed by the Central Valley Regional Water Board at the time of any renewal of SRWTP's discharge permit to determine whether they assure protection and propagation of balanced indigenous communities of aquatic life in the vicinity of the discharge as required by CWA 316(a) and 40 C.F.R. 125.73*." The Discharger submitted an updated Thermal Plan exception request to the Central Valley Water Board on 18 March 2020, which requested this Order carry forward the existing Thermal Plan exceptions with no additional changes or conditions. Based on the Discharger's updated Thermal Plan exception request, Central Valley Water Board staff recommend retaining the Thermal Plan exceptions provided in Order R5-2016-0020-01. Since no changes have been made to the approved Thermal Plan exceptions in Order R5-2016-0020-01 and no conditions have been added in this Order, further State Water Board concurrence is not required.

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

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

pollutants.

3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, 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, sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 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 WDR's 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 indicates that several pollutants were discharged to the Facility's collection system. Of these pollutants, numeric water quality objectives have been adopted for ammonia, anthracene, benzene, benzo(g,h,i)perylene, chlorobenzene, chromium compounds, copper and copper compounds, dichloromethane, ethylbenzene, lead and lead compounds, manganese, methyl tertiary butyl ether, naphthalene, nickel, nitrate compounds, polycyclic aromatic hydrocarbons (PAH's), toluene, xylene, and zinc compounds in the Basin Plan and the CTR. As detailed elsewhere in this Order, available effluent quality data indicates that effluent concentrations of ammonia, copper, and nitrate have a reasonable potential to cause or contribute to an excursion above numeric water quality objectives and effluent limitations for these pollutants are included in this Order.

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). The Discharger

captures and treats all storm water that falls on-site. Therefore, coverage under the General Storm Water Permit is not required.

10. **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The State Water Board amended the Monitoring and Reporting Program (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 Discharger is subject to the requirements of, and must comply with the General Order, as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent Order.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 6 April 2018, U.S. EPA gave final approval to California's 2014-2016 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (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 [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The listing for the northern portion of the Sacramento-San Joaquin Delta, which includes the Sacramento River, includes chlordane, chlorpyrifos, dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, group A pesticides, invasive species, mercury, polychlorinated biphenyls (PCB's), and toxicity.

2. **Total Maximum Daily Loads (TMDL's).** Table F-4, below, identifies the 303(d) listings and TMDL's for the northern portion of the Sacramento-San Joaquin Delta. This Order includes water quality-based effluent limitations (WQBEL's) that are consistent with the assumptions and considerations of the applicable waste load allocations (WLA's) in the 2007 TMDL for diazinon and chlorpyrifos

and the 2011 TMDL for methylmercury.

Table F-4. 303(d) List for Delta Waterways (Northern Portion)

Pollutant	Potential Sources	TMDL Status
Chlordane	Source Unknown	Not Completed
Chlorpyrifos	Source Unknown	Adopted and Effective (10 October 2007)
DDT	Source Unknown	Not Completed
Diazinon	Source Unknown	Adopted and Effective (10 October 2007)
Dieldrin	Source Unknown	Not Completed
Group A Pesticides	Source Unknown	Not Completed
Invasive Species	Source Unknown	Not Completed
Mercury	Agricultural Return Flows; Atmospheric Deposition; Highway/Road/Bridge Runoff; Industrial Point Sources; Municipal Point Sources; Natural Sources; Resource Extraction; Urban Runoff/Storm Sewers	Adopted and Effective (20 October 2011)
PCB's	Source Unknown	Not Completed
Toxicity	Source Unknown	Not Completed

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, California Code of Regulations (CCR), section 20005 et seq. (hereafter Title 27).** Title 27 regulations contain the State Water Board's water quality regulations for discharges of solid wastes to land. Exemption from Title 27 is provided if the discharges of domestic sewage or treated effluent are regulated by WDR's and are consistent with applicable water quality objectives and treatment or storage facilities associated with municipal wastewater treatment plants, provided solid wastes are discharged only in accordance with Title 27. Historically discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or storage ponds, have been exempt from the requirements of Title 27 based on section 20090 et seq. However, the State Water Board issued a decision on another municipal wastewater treatment plant, the City of Lodi, that storage basins must be part of the

treatment process in order to be included in the Title 27 exemptions.

The Facility contains solids storage, land disposal and emergency influent and effluent storage. A determination has been made by the Central Valley Water Board whether the facilities meet the exemptions from Title 27. These facilities include the Solid Storage Basins (SSB's), Dedicated Land Disposal areas (DLD's), and ESB's. The Central Valley Water Board's findings regarding Title 27 exemptions are discussed below.

a. **Solids Storage Basins (SSB's).** The SSB's are unlined storage ponds for anaerobically digested primary and secondary sludge and scum. The SSB's receive about 6,000 tons of wet sludge per day. The digested sludge has about 0.4 to 3 percent solids and is composed of 50 to 80 percent volatile solids. Digested sludge may also contain variable concentrations of contaminants such as heavy metals, chlorinated hydrocarbons and pathogens. The sludge remains in the basins from 3 to 5 years prior to discharge to the DLD's. The SSB's provide additional stabilization treatment, storage and evaporation of the sludge. In July 2009, the Discharger installed six new wells to monitor groundwater water quality. The results from those wells will determine if the SSB's are impacting groundwater and need to be lined. The SSB's are governed by Order R5-2015-0133.

b. **Dedicated Land Disposal Areas (DLD's).** The DLD's are lined land disposal units that receive stabilized sludge from the SSB's. The semi-liquid sludge is applied to the DLD's by subsurface injection during dry seasons. To prevent leaching of heavy metals, the Discharger applies lime to maintain proper soil pH. The DLD's are not exempt from Title 27 and are governed by Order R5-2015-0133.

c. **Corrective Action Program (CAP).** During the 1990's, the groundwater beneath the DLD's were found to be impacted by elevated concentrations of nitrates, chlorides and total dissolved solids. To mitigate the impacted groundwater, the Class III landfill that took grit and screenings was closed and the DLD's were either lined or closed. The Discharger implemented a CAP in December 1995 to remediate the impacted groundwater and it consisted of extraction wells down gradient of the DLD's. The extraction wells keep the groundwater from migrating off the Facility site. Following extraction, the groundwater is either redirected to wetlands or returned to the Facility's influent for treatment. The CAP is operational and is regulated under Order R5-2015-0133.

d. **Emergency Storage Basins (ESB's).** The Facility includes seven ESB's, ESB-A, B, C1, C2, C3, D, and E, with a total capacity of 445 million gallons (MG). All ESBs (A, B, C1, C2,C3, and D) are concrete lined. The capacities of the ESBs at 112 ft water surface elevation are as follows: ESB-A – 22 MG, ESB-B – 27 MG, ESB-C1 – 75 MG, ESB-C2 – 78 MG,

ESB-C3 – 75 MG, ESB-D 75 MG. The purpose of ESB-A and ESB-B are to store diverted influent or primary effluent flows above the hydraulic capacity (peak wet weather flows) of the Facility, provide equalization capacity for diurnal primary effluent flows, and store diverted effluent flows to meet various conditions to comply with this Order. ESB-A is also used to store flows for maintenance purposes. ESB-A and ESB-B are typically used to store excess influent flows. Overflow from ESB-A discharges to lined ESB-B that can, if necessary, overflow to lined ESB-C1, ESB-C2, and ESB-C3. Flow stored in ESB-A and ESB-B is always returned to the headworks for treatment. Flow stored in ESB-C1, ESB-C2, and ESB-C3 may be discharged if compliant final effluent, or returned to the headworks for re-treatment if non-compliant. Final effluent may be diverted to ESB-B, ESB-C1, ESB-C2, ESB-C3 and ESB-D and not discharged to the Sacramento River to maintain the minimum 14:1 river to effluent ratio and maintain compliance with effluent limitations fro temperature and chlorine residual. Since construction of ESB-D, ESB-A is typically only used to store excess influent flows or for maintenance purposes. ESB-A, ESB-B, ESB-C, and ES-D are exempt from Title 27 pursuant to section 20090(a) since these basins are integral to protecting the treatment processes from washing out due to peak wet weather flows or for storage of diverted flow to comply with the conditions of this Order. ESB-A, ESB-B, ESB-C1, ESB-C2, and ESB-C3 have washdown systems for cleaning the basins of any settled material after use, and drainage systems for individually returning contents of each basin to the influent sewer. An underdrain pumping system protects the basin floors from damage due to groundwater uplift forces.

ESB-E is part of the surge relief mechanism and designed to relieve water hammer effects in the influent conduit. ESB-E stores raw influent in an unlined earthen 20 MG basin and is exempt from Title 27 pursuant to section 20090(a).

The Discharger has been approved to use ESB-C1, ESB-C2, and ESB-C3 as dual use basins. The Discharger may use the basins to store partially or untreated wastewater to be returned to the Facility headworks for re-treatment, or fully treated wastewater for discharge to the Sacramento River. The Discharger has submitted a study and interim Standard Operating Procedures (SOPs) for cleaning ESB-C basins after storage of partially treated water. The Discharger also submitted isolation SOPs to ensure partially treated water does not come into contact with fully treated water. The Central Valley Water Board approved the SOPs on 24 July 2020, and the Discharger may update these SOPs upon completion of the Flow Equalization project and submit the updated SOPs to the Central Valley Water Board for final approval by the Executive Officer.

2. **Water Board's Actions to Protect Beneficial Uses of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.** The Central Valley Water Board adopted Resolution R5-2007-0161, *Water Board's Actions to Protect Beneficial Uses of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* on 6 December 2007. The purpose of the resolution is to identify and implement actions needed to protect the San Francisco/Sacramento-San Joaquin Delta beneficial uses. Some actions include exercising the State Water Board's water rights authority over water right decisions and exercising the San Francisco Bay Regional Water Quality Control Board's and Central Valley Water Board's authority over controlling water quality in the Delta.

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., section 1311(b)(1)(C); 40 C.F.R. section 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 4-27 contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 C.F.R. section 122.44(d)(1). With

respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "*Policy for Application of Water Quality Objectives*") (40 C.F.R. 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 section 3.1.20) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents' objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCL's)*" in Title 22 of the 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. Consistent with Order R5-2016-0020-01, this Order allows the Discharger to reclaim disinfected secondary effluent for dust control and compaction on construction projects, landscape irrigation, wash down water, vehicle washing and grounds maintenance within the Facility boundaries, and for flushing of pipelines within the sewer collection system. It may also be used for in-plant process water and fire protection and used in the tertiary treatment plant and distribution system. This Order requires that use of reclaimed disinfected secondary effluent meet the requirements of CCR, Title 22, section 60301, et seq. and the associated DDW guidelines as applicable. Runoff of disinfected secondary effluent is prohibited except as regulated by Master Reclamation Permit 97-146.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at 40 C.F.R. section122.41(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 No. WQO 2002-0015, which cites the federal regulations, 40 C.F.R. section 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

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

4. **Prohibition III.D (No discharge of hazardous waste).** This prohibition is based on CCR, Title 22, section 66261.1 *et seq*, which prohibits discharge of hazardous waste.

5. **Prohibition III.E (No discharge when the Sacramento River instantaneous flow is less than 1,300 cfs) and Prohibition III.F (No discharge when there is less than 14:1 (river to effluent) flow ratio).** Previous Orders 5-00-188, R5-2010-0114-04, and R5-2016-0020-01 prohibited discharge unless the Sacramento River is flowing more than 1,300 cfs and there is at least a 14 to 1 flow ratio (river: effluent). These conditions were based on previous studies that determined river flows of at least 1,300 cfs and a flow ratio of at least 14 to 1 (river to effluent) are required to allow adequate mixing of the effluent. Although the diffuser configuration has changed from 99 ports to 74 ports since the initial studies and more recent dye studies confirmed the dynamic modeling showing mixing zones, all of the analyses for antidegradation, thermal plumes, and dilution credits have been based on continuing these conditions. Therefore, consistent with previous Orders 5-00-188, R5-2010-0114-04, and R5-2016-0020-01, these prohibitions have been retained this Order.

6. **Prohibition III.G (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. Order R5-2016-0020-01 included flow as an effluent limit based on the Facility design flow. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as

a discharge prohibition will be calculated the same way as the previous Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 C.F.R. part 133.

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

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

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD_5, 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 of the Fact Sheet for a discussion on pathogens, which includes 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
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	AMEL 30 AWEL 45
Biochemical Oxygen Demand (5-day @ 20°C)	% Removal	AMEL 85
pH	standard units	Instantaneous Max 6.0 Instantaneous Min 9.0
Total Suspended Solids	mg/L	AMEL 30 AWEL 45
Total Suspended Solids	% Removal	AMEL 85

Table F-5 Notes:

1. Note that more stringent WQBEL's for BOD_5, pH, and TSS are applicable and are established as final effluent limitations in this Order (see 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 tertiary 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 section 122.44(d)(1)(vi).

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

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution 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 2-1 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning*…" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses*."

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983*." Federal regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal regulations, 40 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, shellfish 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.** The Discharger discharges to the Sacramento River within the legal boundary of the Sacramento-San Joaquin Delta. The Sacramento-San Joaquin Delta is vital to California as it comprises over 700 miles of interconnected waterways and encompasses 1,153 square miles. The Sacramento-San Joaquin Delta is home to over 280 species of birds and more than 50 species of fish, making it one of the most ecologically important aquatic habitats in the state. Drinking water for over 25 million Californians is pumped from the Sacramento-San Joaquin Delta via the State Water Project, Central Valley Water Project, and local water intakes. The Sacramento-San Joaquin Delta supports California's trillion-dollar economy with $27 billion annually for agriculture. Additionally, the Delta has 12 million user-days for recreation each year.

The Sacramento River at Freeport is within the designated critical habitat for five federally listed fish species including winter- and spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), Delta smelt (*Hypomesus transpacificus*), and Green sturgeon (*Acipenser medirostris*). Other listed wildlife species that feed on Central Valley fishes include the California Least Tern (*Stenula antillarum brownie*) and the Giant Garter snake (*Thamnopsis gigas*). In addition to the federally listed species, the California State Species of Special Concern include the Sacramento Splittail (*Pogonichthys macrolepidotus*) and the Central Valley Fall/Late-Fall Salmon (*Oncorhynchus tshawytscha*).

Refer to 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 collected from March 2017 through February 2020, which includes effluent and ambient background data submitted in SMR's. Additional data outside of this range was also analyzed. Order R5-2016-0020-01 required the Discharger to begin monthly effluent and receiving water characterization monitoring in January 2017. Therefore, effluent and receiving water monitoring conducted in January 2017 and February 2017 was also considered for the purposes of the RPA.

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. parts 122.44 and 122.45). The U.S. EPA allows states to

have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the 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:*

A: A mixing zone shall not:

1. compromise the integrity of the entire water body;

2. cause acutely toxic conditions to aquatic life passing thorough the mixing zone;

3. restrict the passage of aquatic life;

4. adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;

5. produce undesirable or nuisance aquatic life;

6. result in floating debris, oil, or scum;

7. produce objectionable color, odor, taste, or turbidity;

8. cause objectionable bottom deposits;

9. cause nuisance;

10. dominate the receiving water body or overlap a mixing zone from different outfalls; or

11. be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."

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

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

ii. **Receiving Water Characteristics.** The lower Sacramento River in the vicinity of the discharge is a large river with sufficient flows for dilution. The Sacramento watershed is a heavily managed system of reservoirs and diversions. The Sacramento River near the discharge location (Freeport) drains a 26,146-square-mile basin that spans the entire northern Central Valley of California from the crest of the Coast Range to the crest of the Sierra Nevada. Flows in the Sacramento River are influenced by precipitation (rainfall and snowpack/snowmelt) but are also influenced by several reservoirs on the tributaries and main stem, which are managed for flood control, water supply, and hydroelectric power generation. Irrigation diversions and agricultural return flows also affect the river regime. Winter and spring flows in the Sacramento River often exceed 50,000 cfs. While summer flows average 10,000 cfs, they can fall below 4,000 cfs. Daily flow probabilities for the Sacramento River at Freeport, based on U.S. Geologic Survey gauged flow data from 1942-1989, indicate that there is only a 10 percent probability of flows less than or equal to 10,000 cfs, and a 10 percent probability of flows greater than 70,000 cfs. Therefore, typical flows in the Sacramento River range from 10,000 to 70,000 cfs. The critical low flows for the Sacramento River based on flow data at Freeport from 1970 to 2009 are shown in Table F-6, below.

Table F-6. Critical Receiving Water Flows

Critical Low Flows	Receiving Water Flow (cfs)
1Q10 (see table note 1. below)	5,060
7Q10 (see table note 2. below)	5,846
30Q5 (see table note 3. below)	8,234
Harmonic Mean (see table note 4. below)	15,403

Table F-6 Notes:

1. Lowest daily average flow with a return frequency of 10 years.
2. Lowest 7-day average flow with a return frequency of 10 years.
3. Lowest 30-day average flow with a return frequency of 5 years.
4. At Freeport from 1 January 1970 through 31 December 2014.

iii. **Dilution/Mixing Zone Study Results.** For completely mixed discharges, the Central Valley Water Board may grant a mixing zone and apply a dilution credit in accordance with section 1.4.2.1 of the SIP, based on the dilution ratio. For incompletely mixed discharges, the Discharger must perform a mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. The discharge is considered an incompletely mixed discharge, so the Discharger conducted a mixing zone study. A mathematical dynamic model was developed by Flow Sciences Incorporated and consists of five models linked in series, with the output from previous models used as part of the inputs to subsequent models. The models are linked as shown in Figure F-1 and are described below.

PROSIM – *U.S. Bureau of Reclamation's Project Simulation Model*. PROSIM simulates the existing hydrologic conditions in the Delta study area and was used to calculate the 70-year period of record (1922-1991) that served as the basis for the Discharger's study. Flow and storage calculated by PROSIM was used as input to the Temperature Models. Also, output from PROSIM were used as input to the Fischer Delta Model (FDM) and includes export pumping rates from Tracy and Banks; Contra Costa Water District pumping at Rock Slough and Old River; North Bay Aqueduct pumping; City of Vallejo pumping; net Delta consumptive use; Delta Cross Channel position; and Delta inflows from Yolo Bypass, San Joaquin River, Calaveras River, Cosumnes River, Mokelumne River, and the Sacramento River.

Temperature Models – *U.S. Bureau of Reclamation models*. The U.S. Bureau of Reclamation has developed temperature models for five reservoirs (Trinity, Whiskytown, Shasta, Oroville, and Folsom) and three river systems (Sacramento, Feather, and American). These models estimate mean monthly water temperatures based on flow and storage quantities calculated by PROSIM.

FDM – *Fischer Delta Model*. The Fischer Delta Model was used to support both the near-field and far-field modeling. For the near-field region, FDM was used to disaggregate hourly flow rates for the Sacramento River at Freeport from the 70-year record of monthly flows calculated by PROSIM. The hourly flow data were then used as input to the 3-dimensional near-field model (FLOWMOD) as well as the Longitudinal Dispersion model. For the far-field region, FDM was used to simulate the contribution of Facility discharges to water quality concentrations at various critical locations in the Delta.

FLOWMOD – *Flow Science's computational fluid dynamics model*. The near-field modeling was accomplished with the 3-dimensional FLOWMOD computational fluid dynamics model developed by Flow

Science. FLOWMOD was used to calculate the steady-state concentration of effluent in each grid cell of the model domain for specific combinations of river and effluent flow rates. A horizontal grid resolution of 6 feet was defined from the diffuser to a point 300 feet downstream of the diffuser. The grid resolution increased geometrically from 300 feet to 700 feet downstream of the diffuser. Results from the model defined the average effluent concentration in the area of impact (i.e., within the 200 to 1 dilution contour) downstream of the diffuser. The Discharger used this model to separately evaluate the thermal characteristics of the discharge plume.

LD – *Flow Science's Longitudinal Dispersion Model*. The LD model was developed by Flow Science and the computer code is written in the Matlab programming language for implementation on an IBM-PC compatible microcomputer. This 1-dimensional model simulates the advection and dispersion of effluent discharged to the Sacramento River including reverse tidal flow conditions. The LD model is used to estimate the concentration in the near-field vicinity of the diffuser following the start of a diversion event in which the effluent discharge is diverted to storage when the Sacramento River flow rate falls below the minimum required 14 to 1 dilution ratio.[1]

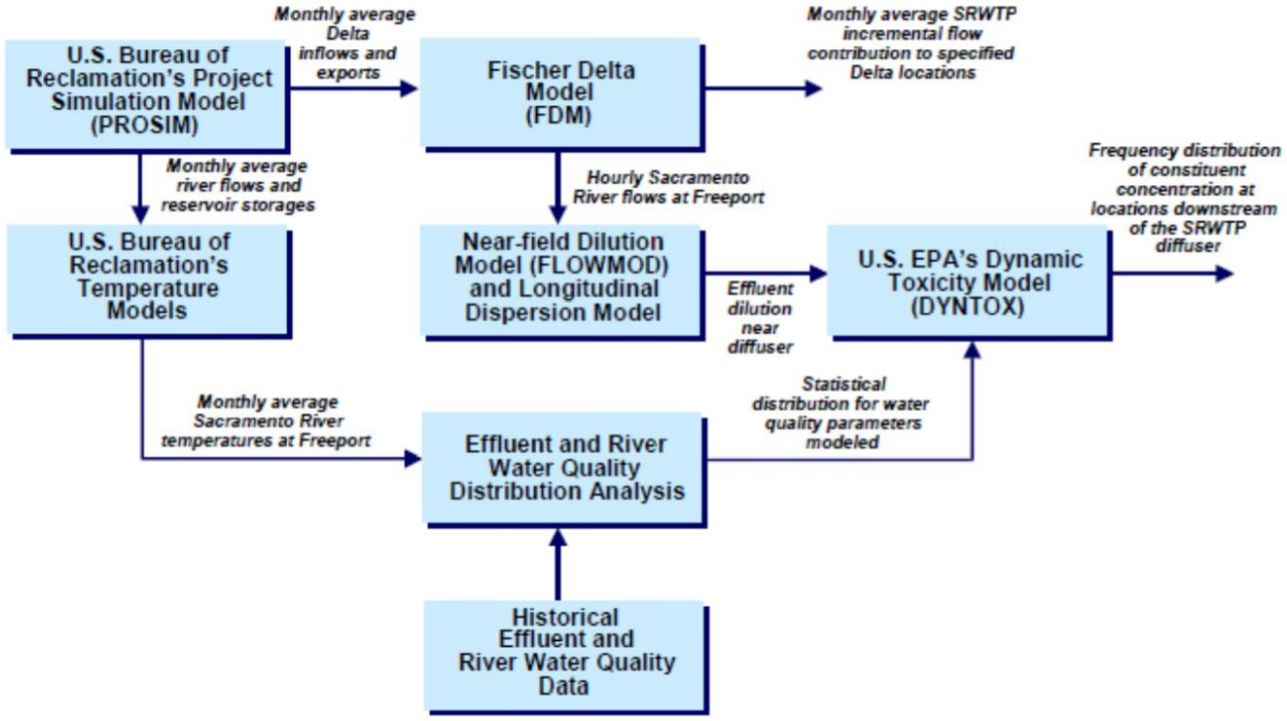
The results from the LD model are combined with the results from the FLOWMOD model (by method of superposition) to estimate the concentrations of the effluent in the near-field zone that result from "double dosing" during the flow reversal events. The length of the LD model domain is 53,000 feet (about 10 miles) and includes the diffuser. The model domain is represented by 530 discrete spatial intervals, each 100 feet long. Calculations are made at a 400-second time step.

DYNTOX – *U.S. EPA's Dynamic Toxicity Model*. DYNTOX was developed in 1985 with funding support provided by U.S. EPA. The model is designed for WLA's of toxic substances. DYNTOX contains three procedures to define the frequency and duration of exposure above a specific water quality criterion: (1) continuous simulation, (2) Monte Carlo simulation, and (3) log normal analysis. The continuous simulation procedure with randomly generated water quality distributions was used for the Discharger's study. Hourly values for the 70-year simulation period resulted in over 600,000 data

[1] The Discharger is prohibited from discharging when the dilution ratio (river to effluent) is less than 14 to 1 or if river flows are less than 1,300 cfs and diverts all effluent discharge to ESB's. These requirements ensure the diffuser is operating as designed and limits double-dosing of the discharge during flow reversals.

points that were representative of the statistical concentration distribution at six key locations downstream of the diffuser.

Figure F-1. Dynamic Model Flow Diagram



In the period from 2005 through 2007, the Discharger performed several field validation studies to corroborate the effectiveness of the modeling tools in representing water quality conditions in the Sacramento River. Due to the complexity of the mathematical models, in 2006, the Central Valley Water Board used the services of Tetra Tech, a U.S. EPA contractor, to assist with the review of the dynamic model. Tetra Tech's modeling experts concluded that the model study was conducted in a sound and scientifically defensible manner. The modeling experts determined that the linked dynamic modeling system is capable of providing an accurate probabilistic representation of receiving water quality conditions. The only perceived shortcoming noted by the model experts from a regulatory perspective was the complexity of the system of linked models and the proprietary status of some of the model components preventing its transmittal and direct use by Central Valley Water Board staff. The results of Tetra Tech's review are summarized in a Tetra Tech memorandum dated 30 June 2008.

The Discharger provided an update to the dynamic modeling results in its mixing zone request provided with the ROWD (Technical Memorandum from Larry Walker Associates dated 7 July 2020) that reflects effluent data collected between January 2016 and December

2019 and an expanded historical ambient dataset to include data from 2005 to 2019.

iv. **Evaluation of Available Dilution for Acute 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 an acute mixing zone for compliance with acute water quality criteria.

The Discharger requested an acute aquatic life mixing zone that is 300 feet wide and extends 60 feet downstream of the diffuser in their July 2020 Mixing Zone Request. The requested acute mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*."[1] The Sacramento River is approximately 600 feet wide at the surface. The acute mixing zone is approximately 60 feet long by 300 feet wide, located along the bottom half of the river. The Sacramento River is a very large waterbody. For the pollutants for which a mixing zone was requested, the acute mixing zone would not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. U.S. EPA recommends that float times through a mixing zone less than 15 minutes ensures that there will not be lethality to passing organisms. The acute mixing zone proposed by the Discharger extends 60 feet downstream from the outfall. Based on a minimum river velocity of 0.35 feet per second, the minimum

[1] TSD, pg. 33

float time is 2.8 minutes.[1] Furthermore, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100 percent effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the mixing zone do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger developed a dynamic model to evaluate the near-field effects of the discharge. The dynamic model was used to evaluate the zone of passage around the mixing zone where water quality objectives are met. The dynamic model indicates there is a zone of passage for aquatic life, which was verified through dye testing. The size of the zone of passage varies on either side of the river depending on the river geometry.[2] The surface of the Sacramento River is approximately 600 feet across and the bottom of the river is approximately 500 feet across. Based on the model, a zone of passage approximately 75 to 100 feet wide occurs along the west bank and 175 to 200 feet wide occurs along the east bank downstream of the discharge. Because the diffuser is located at the bottom of the river, the mixing zone will typically occupy only a portion of the bottom half of the river at the edge of the 60-foot mixing zone.

(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 mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats. The Discharger evaluated the probability of migratory and resident fish being exposed to acute or chronic toxicity in the vicinity of the discharge and found that fish did not congregate and hold within the discharge plume for continuous periods of time sufficient to result in exposure durations that would cause acute or chronic toxicity, based on plume water quality.

(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

[1] Memorandum from Larry Walker Associates to the Discharger, *Mixing Zones and Prevention of Acutely Toxic Conditions*, dated 13 July 2009.

[2] Model Verification Results for FLOWMOD Simulations of SRCSD Effluent Discharge to the Sacramento River at Freeport, November 2007 Field Study, Flow Science

in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meet CCR, Title 22, division 4, chapter 3 (Title 22) (or equivalent) tertiary filtration, which will ensure continued compliance with these mixing zone requirements. With these requirements, the acute 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 acute mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The acute mixing zone is not near a drinking water intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

Although the acute aquatic life mixing zone complies with the SIP and the Basin Plan, due to concerns with aquatic toxicity in the Sacramento-San Joaquin Delta, the Central Valley Water Board has denied the allowance of an acute aquatic life mixing zone in this Order. Section 1.4.2 of the SIP states, in part, "…*The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis*." In this case, the Sacramento-San Joaquin Delta is impaired for unknown toxicity and has experienced a significant pelagic organism decline. Therefore, the Central Valley Water Board finds that the allowance of an acute aquatic life mixing zone is not acceptable for this discharge.

v. **Evaluation of Available Dilution for Chronic Aquatic Life Criteria.** The chronic aquatic life mixing zone is sized to protect the water body as a whole and is generally larger than the acute mixing zone. A mixing zone for chronic aquatic life criteria has been allowed in this Order for development of the WQBEL's for copper and cyanide.

The chronic aquatic life mixing zone is 300 feet wide and extends 60 feet downstream of the diffuser. The chronic mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated*

concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats."[1] The Sacramento River is approximately 600 feet wide at the surface. The chronic mixing zone is approximately 400 feet wide by 60 feet long, located along the bottom half of the river. The Sacramento River is a very large waterbody. For the pollutants for which a mixing zone was requested, the chronic mixing zone would not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The chronic mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100 percent effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger developed a dynamic model to evaluate the near-field effects of the discharge. The dynamic model was used to evaluate the zone of passage around the mixing zone where water quality objectives are met. The dynamic model indicates there is a zone of passage for aquatic life, which was verified through dye testing. The size of the zone of passage varies on either side of the river depending on the river geometry.[2] The surface of the river is approximately 600 feet across and the bottom of the river is approximately 500 feet across. Based on the model, , the zone of passage at the surface of the river is generally at least 100 feet on both sides of the river, while the zone of passage at the bottom of the river is greater than 40 feet from both sides of the 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 chronic mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats. The Discharger evaluated the probability of migratory and resident fish being exposed to acute

[1] TSD, pg. 33
[2] Model Verification Results for FLOWMOD Simulations of SRCSD Effluent Discharge to the Sacramento River at Freeport, November 2007 Field Study, Flow Science

or chronic toxicity in the vicinity of the discharge and found that fish did not congregate and hold within the discharge plume for continuous periods of time sufficient to result in exposure durations that would cause acute or chronic toxicity, based on plume water quality.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meets Title 22 (or equivalent) tertiary filtration, which will ensure continued compliance with these mixing zone requirements. With these requirements, the chronic 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 chronic mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The chronic mixing zone is not near a drinking water intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

The chronic aquatic life mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

vi. **Evaluation of Available Dilution for Human Health Carcinogen Criteria.** The Discharger's dynamic model is useful in determining the mixing and dilution near the discharge (i.e., near-field) and the

model domain extends 700 feet downstream. Human health-based criteria from carcinogenic effects are based on long-term exposures, such as safe levels for lifetime exposure (e.g., consumption of 1 liter per day for 70 years) and the mixing zones typically extend beyond the near-field mixing estimated by the Discharger's dynamic model. Since the human health carcinogen mixing zone extends beyond the domain of the dynamic model, the Discharger conducted a study titled "*Sacramento River Harmonic Mean Mixing Zone Report*" (June 2010) to establish the human health carcinogen mixing zone and dilution. The June 2010 study identified the point downstream of the discharge where complete mixing occurs. Based on the results of the June 2010 study, the discharge is completely mixed approximately 3 miles downstream. The Discharger has requested the human health mixing zone extend to this point.

In determining the available receiving water dilution for compliance with human health carcinogen criteria, the SIP, section 1.4.2.1 requires that the harmonic mean of the receiving water flow be compared against the arithmetic mean of the effluent flow of the observed discharge period. Based on Sacramento River flow data at Freeport from 1 October 1969 to 20 April 2020, the harmonic mean river flow is 15,295 cfs. The permitted average dry weather flow for the Facility is 181 MGD (280 cfs). Therefore, a dilution ratio of 55:1 is available for compliance with human health carcinogen criteria. This Order allows a dilution credit for human health carcinogen criteria of 55:1 and the mixing zone extends 3 miles downstream of the discharge. A mixing zone for human health carcinogen criteria has been allowed in this Order for development of the WQBEL's for bis(2-ethylhexyl)phthalate, chlorodibromomethane, and dichlorobromomethane.

The human health carcinogen criteria mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*."[1] The Sacramento River is a very large waterbody and the human health carcinogen mixing zone is not applicable to aquatic life criteria; therefore, the mixing zone does not compromise the integrity of the entire waterbody.

[1] TSD, pg. 33

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The human health carcinogen 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 carcinogen 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 carcinogen mixing zone is not applicable to aquatic life criteria; therefore, 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 carcinogen 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 carcinogen mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health carcinogen mixing zone. The nearest drinking water intake is the Freeport Regional Water Authority intake 1 mile upstream of the discharge at Freeport, which is owned and operated by East Bay Municipal Utility District (EBMUD) and Sacramento County Water Agency (SCWA). An operating agreement between the Freeport Regional Water Authority and the Discharger will prevent diversion of river water containing diluted treated wastewater at the Freeport Regional Water Authority intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

The human health carcinogen mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

vii. **Evaluation of Available Dilution for Human Health Nitrate plus Nitrite Primary MCL.** The human health nitrate plus nitrite mixing zone is sized to protect the water body as a whole. A mixing zone for human health nitrate plus nitrite Primary MCL has been allowed in this Order for development of the WQBEL's for nitrate plus nitrite.

The human health nitrate plus nitrite mixing zone is 400 feet wide and extends 30 feet downstream of the diffuser. The mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*."[1] The Sacramento River is a very large waterbody and the human health nitrate plus nitrite mixing zone is not applicable to aquatic life criteria; therefore, the 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 nitrate plus nitrite 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 nitrate plus nitrite 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 nitrate plus nitrite mixing zone is not applicable to aquatic

[1] TSD, pg. 33

life criteria; therefore, 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 mixing zone only allows an increase in the concentration-based effluent limits for nitrate plus nitrite, total (as N). This Order establishes mass-based effluent limits for nitrate plus nitrite consistent with the Primary MCL. The allowance of a human health nitrate plus nitrite mixing zone will not result in sufficient loading of nutrients to 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 in the vicinity of the outfall. Furthermore, due to the continuation of the mass-based loading limits from the previous Order, these impacts will not occur in the far-field downstream within the Sacramento-San Joaquin Delta or the State Water Project and Central Valley Project drinking water systems.

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

(g) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health nitrate plus nitrite mixing zone. The nearest drinking water intake is the Freeport Regional Water Authority intake 1 mile upstream of the discharge at Freeport, which is owned and operated by East Bay Municipal Utility District (EBMUD) and Sacramento County Water Agency (SCWA). The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

The human health nitrate plus nitrite mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's *Water Quality Standards Handbook, 2nd*

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

viii. **Evaluation of Available Dilution for Chronic Whole Effluent Toxicity (WET).** The chronic WET mixing zone is sized to protect the water body as a whole. A mixing zone for chronic WET has been allowed in this Order for development of the WQBEL's for chronic WET.

The chronic WET mixing zone is 300 feet wide and extends 350 feet downstream of the diffuser. The chronic WET mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*."[1] The Sacramento River is approximately 600 feet wide at the surface. The chronic WET mixing zone is approximately 400 feet wide by 350 feet long, located along the bottom half of the river. The Sacramento River is a very large waterbody. For the pollutants for which a mixing zone was requested, the chronic WET mixing zone would not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The chronic WET mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100 percent effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic WET mixing zone do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger developed a dynamic model to evaluate the near-field effects of the discharge. The dynamic model was used to evaluate the zone of passage around the mixing zone where water quality objectives are met. The dynamic model indicates there is a zone of passage for aquatic life, which was verified through dye testing. The size of the zone of passage varies on either side of

[1] TSD, pg. 33

the river depending on the river geometry.[1] The surface of the river is approximately 600 feet across and the bottom of the river is approximately 500 feet across. Based on the model, , the zone of passage of 25 to 50 feet occurs on the west bank and 125 to 150 feet occurs along the east bank downstream of the outfall diffuser.

(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 chronic WET mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats. The Discharger evaluated the probability of migratory and resident fish being exposed to acute or chronic toxicity in the vicinity of the discharge and found that fish did not congregate and hold within the discharge plume for continuous periods of time sufficient to result in exposure durations that would cause acute or chronic toxicity, based on plume water quality.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meets Title 22 (or equivalent) tertiary filtration, which will ensure continued compliance with these mixing zone requirements. With these requirements, the chronic WET 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 chronic WET mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

[1] Model Verification Results for FLOWMOD Simulations of SRCSD Effluent Discharge to the Sacramento River at Freeport, November 2007 Field Study, Flow Science

(g) *Shall not be allowed at or near any drinking water intake* – The chronic WET mixing zone is not near a drinking water intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

The chronic WET mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

ix. **Evaluation of Available Dilution for Specific Pollutants (Pollutant-by-Pollutant Evaluation).** 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 (BPTC). The Discharger requested in their July 2020 Mixing Zone Request acute and chronic aquatic life dilution credits for copper and cyanide, and human health dilution credits for bis(2-ethylhexyl)phthalate, chlorodibromomethane, and dichlorobromomethane. A pollutant-by-pollutant evaluation of dilution is discussed below:

(a) **Bis(2-ethylhexyl)phthalate.** The receiving water contains assimilative capacity for bis(2-ethylhexyl)phthalate and a human health mixing zone for bis(2-ethylhexyl)phthalate meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*a mixing zone shall be as small as practicable*," and section 1.4.2.2.B requires, "*the RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*."

The Central Valley Board considered Facility performance and the receiving water's assimilative capacity for bis(2-ethylhexyl)phthalate 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 and possibly violating the Antidegradation Policy. Based on Facility performance, the full dilution credits are not needed for bis(2-ethylhexyl)phthalate and have been

reduced to ensure compliance with the mixing zone provisions of the SIP. There is no new information providing reason to modify effluent limits for bis(2-ethylhexyl)phthalate. Therefore, this Order retains the performance-based effluent limits for bis(2-ethylhexyl)phthalate from Order R5-2016-0020-01. The mixing zone is as small as practicable for this Facility and fully complies with the SIP and Basin Plan.

(b) **Chlorodibromomethane and Dichlorobromomethane.** Based on the projected effluent quality upon implementation of ammonia removal, the Facility will not be able to meet end-of-pipe effluent limitations for chlorodibromomethane and dichlorobromomethane. The receiving water contains assimilative capacity for chlorodibromomethane and dichlorobromomethane and a human health mixing zone for these parameters meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*a mixing zone shall be as small as practicable*," and section 1.4.2.2.B requires, "*the RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*."

This Order maintains the dilution credits allowed in Order R5-2016-0020-01, which include the maximum human health dilution credit of 55:1. The allowed dilution credits result in an average monthly effluent limit (AMEL) of 22 µg/L and a maximum daily effluent limitation (MDEL) of 44 µg/L for chlorodibromomethane, and an AMEL of 31 µg/L and an MDEL of 70 µg/L for dichlorobromomethane. Based on expected Facility performance for the upgraded Facility, the mixing zones for chlorodibromomethane and dichlorobromomethane are considered as small as practicable and fully comply with the SIP and Basin Plan.

(c) **Copper.** Based on effluent data from January 2017 through February 2020, and increasing copper concentrations due to water conservation, it appears the Facility cannot meet end-of-pipe effluent limitations for copper. The receiving water contains assimilative capacity for copper and aquatic life mixing zones for copper meet the mixing zone requirements of the SIP. As discussed in section IV.C.2.c.iv, the Central Valley Water Board has denied the allowance of an acute aquatic life mixing zone in this Order. Therefore, the WQBEL's for copper have been developed considering the allowance of chronic aquatic life dilution credits. Section 1.4.2.2 of the SIP requires that, "*a mixing zone shall be as small as practicable*," and section

1.4.2.2.B requires, "*the RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*."

For copper, the dynamic modeling approach described in section IV.C.4.f has not been used to calculate the WQBEL's. Instead, the Discharger's model was used to determine the dilution factor at the edge of the 60-foot chronic aquatic life mixing zone and the long-term average was calculated using the SIP's steady-state modeling approach. Consistent with Order R5-2016-0020-01 and based on the 95th percentile dilution factor estimated at the edge of the 60-foot chronic aquatic life mixing zone, this Order allows for a chronic aquatic life dilution credit of 2.45 for copper. Considering a chronic aquatic life mixing zone with a dilution factor of 2.45, and no mixing zone for acute criteria, the WQBEL's for copper are an AMEL of 7.4 µg/L and MDEL of 12 µg/L. Based on Facility performance and due to concerns that effluent copper concentrations are increasing due to recent water conservation efforts, the mixing zone for copper is as small as practicable for this Facility and fully complies with the SIP and Basin Plan.

(d) **Cyanide.** The receiving water contains assimilative capacity for cyanide and aquatic life mixing zones for cyanide meet the mixing zone requirements of the SIP. As discussed in section IV.C.2.c.iv, the Central Valley Water Board has denied the allowance of an acute aquatic life mixing zone in this Order. Therefore, the WQBEL's for cyanide have been developed considering the allowance of chronic aquatic life dilution credits. Section 1.4.2.2 of the SIP requires that, "*a mixing zone shall be as small as practicable*," and section 1.4.2.2.B requires, "*the RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*."

For cyanide, the dynamic modeling approach described in section IV.C.4.f has been used to calculate the WQBEL's for cyanide when calculating the chronic long-term average (LTA). In accordance with step 5 of section 1.4.B of the SIP, WQBEL's are calculated using the LTA_{acute} and $LTA_{chronic}$ and the more stringent WQBEL's are applied. Considering the dynamic modeling approach for calculating the $LTA_{chronic}$, and no mixing zone for acute criteria, the WQBEL's for cyanide are an AMEL of 11 µg/L and MDEL of 22 µg/L. Based on Facility performance and due to concerns that effluent cyanide concentrations are

increasing due to recent water conservation efforts, the mixing zone for cyanide is as small as practicable for this Facility and fully complies with the SIP and Basin Plan.

(e) **Chronic Whole Effluent Toxicity (WET).** As discussed in section IV.C.2.v, above, a mixing zone for chronic toxicity meets the requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*," and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*.". Order R5-2016-0020-01 included a chronic WET monitoring trigger of 8 TUc, which allows for a dilution credit of 8:1. Based on the Discharger's July 2020 Mixing Zone Request and dynamic modeling results, the allowable dilution equates to a chronic WET mixing zone extending approximately 350-feet downstream. This Order retains the chronic WET dilution credit of 8:1 in establishing effluent limits for chronic WET.

(f) **Nitrate plus Nitrite, Total (as N).** The receiving water contains assimilative capacity for nitrate plus nitrite in the near-field for protection of the Primary MCL and the human health nitrate plus nitrite Primary MCL mixing zone meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*a mixing zone shall be as small as practicable*," and section 1.4.2.2.B requires, "*the RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*."

Based on expected Facility performance for the upgraded Facility, the mixing zone for nitrate plus nitrite is as small as practicable for this Facility and fully complies with the SIP and Basin Plan.

x. **Regulatory Compliance for Dilution Credits and Mixing Zones.** The Central Valley Water Board finds the effluent limitations established in this Order for chronic WET, nitrate plus nitrite, total (as N), bis(2-ethylhexyl)phthalate, chlorodibromomethane, copper, cyanide, and dichlorobromomethane comply with the Basin Plan, SIP, federal antidegradation regulations and the State Antidegradation Policy. In summary, 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 Discharger's mixing zone study, 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 chronic WET, human health nitrate plus nitrite Primary MCL, chronic aquatic life criteria, and human health carcinogen criteria, 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 bis(2-ethylhexyl)phthalate 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 for bis(2-ethylhexyl)phthalate allowing a dilution factor that exceeds that allowed by this Order would not comply with the State Antidegradation Policy for receiving waters outside the allowable mixing zone. 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 dilution credit established in this Order for bis(2-ethylhexyl)phthalate has been adjusted 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 for bis(2-ethylhexyl)phthalate.

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 criteria. The U.S. EPA conversion factors were also used to convert receiving water dissolved copper concentrations to total concentrations for the purpose of calculating WQBEL's for copper.

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 (40 C.F.R. section 131.3(c)(4)(ii)). Design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10).[3] This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded

[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. section 131.38(c)(4)).

[3] 40 C.F.R. section 131.38(c)(2)(iii) Table 4

more than once in a three year period on average.[1] 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.[2] The CTR does not define the term "ambient," as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully complies with the CTR and SIP.

i. **Summary Findings**

The ambient hardness for the Sacramento River is represented by the data in Figure F-2, below, which shows ambient hardness ranging from 34 mg/L to 88 mg/L based on collected ambient data from January 2017 through February 2020. 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, Central Valley Water Board 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 34 mg/L (minimum) up to 88 mg/L (maximum). Staff recommends that the Board use the ambient hardness values shown in Table F-7 for the following reasons.

(a) Using the ambient receiving water hardness values shown in Table F-7 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-7

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

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 34 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, which will result in the BPTC of the discharge necessary to assure that: a) a pollution or nuisance will not occur, and b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

(d) Using the ambient hardness values shown in Table F-7 is consistent with the CTR and SIP's requirements for developing metals criteria.

Table F-7. Summary of CTR Criteria for Hardness-dependent Metals

CTR Metals	Ambient Hardness (mg/L)	CTR Criteria (µg/L, total) (Acute)	CTR Criteria (µg/L, total) (Chronic)	Basin Plan Objective (µg/L, total) (Maximum Concentration)
Copper	88	12	8.4	10.4
Chromium III	88	1,600	190	--
Cadmium	88 (acute) 88 (chronic)	3.9	2.2	--
Lead	80	61	2.4	--
Nickel	88	420	47	--
Silver	74	2.4	--	11.8
Zinc	88	110	110	102

Table F-7 Notes:

1. **CTR Criteria (ug/L, total).** Acute and chronic numbers were rounded to two significant figures in accordance with the CTR (40 C.F.R. section 131.38(b)(2)).

2. **Ambient hardness (mg/L).** Values in Table F-7 represent actual observed receiving water hardness measurements from the dataset shown in Figure F-2.

3. **The Basin Plan CTR's hardness dependent metals criteria** equations vary differently depending on the metal, which results in differences in the range of ambient hardness values that may be used to develop effluent limitations that are

protective of beneficial uses and comply with CTR criteria for all ambient flow conditions.

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)

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

WER = water-effect ratio

m, b = metal- and criterion-specific constants

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

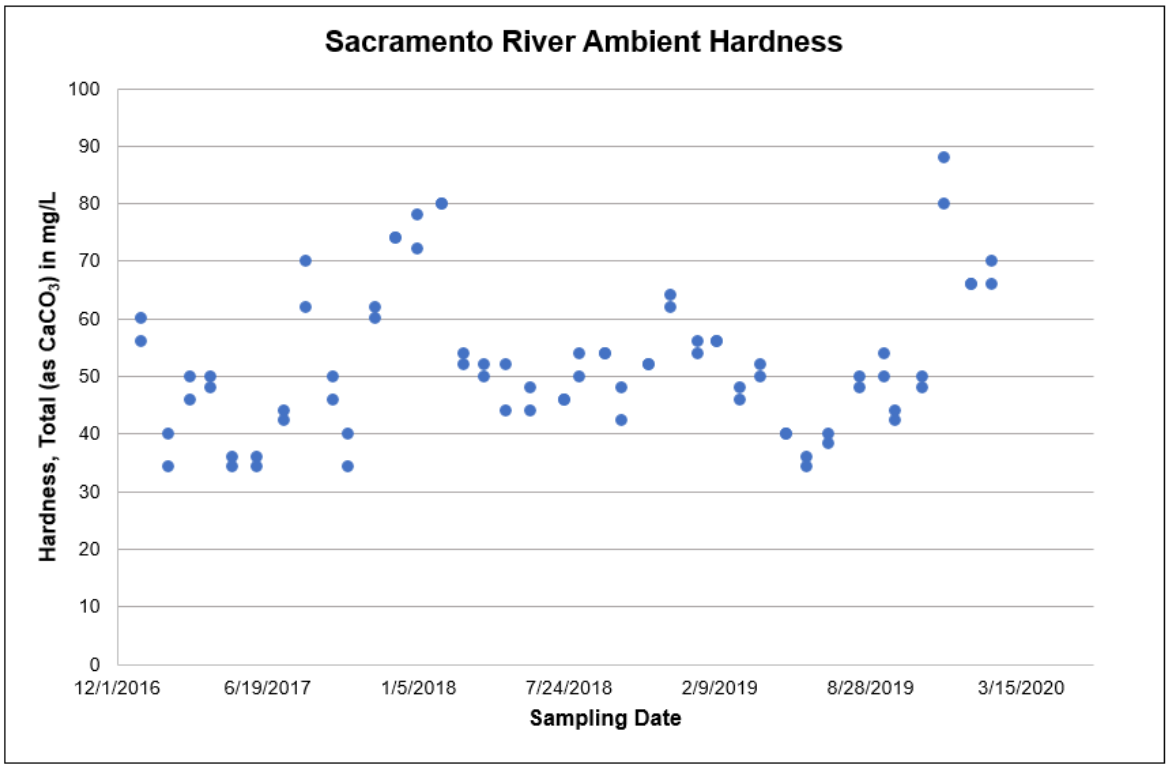
[1] 40 C.F.R. section 131.38(c)(2)(iii) Table 4, notes 1 and 2

7Q10 Sacramento River flows are 5,060 cfs and 5,846 cfs, respectively.[1]

iii. **Ambient Conditions**

The ambient receiving water hardness varied from 34 mg/L to 88 mg/L, based on 76 samples from January 2017 through February 2020 (see Figure F-2).

Figure F-2. Observed Ambient Hardness Concentrations 34 mg/L – 88 mg/L



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-2 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 varies substantially. 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

[1] Sacramento River at Freeport.

do not protect beneficial uses. Also, the use of the minimum ambient hardness would result in criteria that are protective of beneficial uses, but such criteria may not be representative considering the wide range of ambient conditions.

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

Reasonable worst-case ambient conditions:

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

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

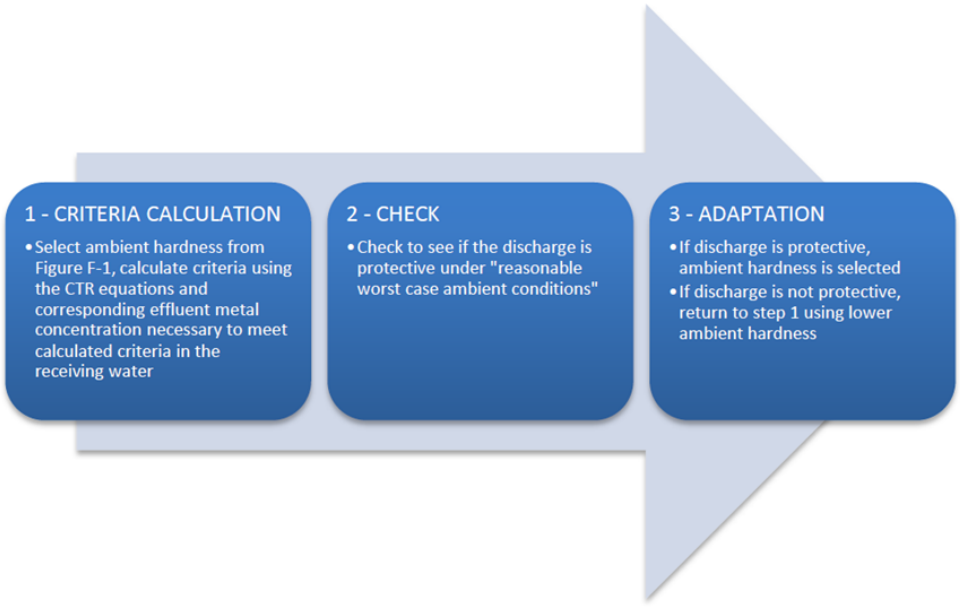
- "Low receiving water hardness." The minimum receiving water hardness condition of 34 mg/L was selected to represent the reasonable worst-case receiving water hardness.

- "Background ambient metal concentration at criteria." This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the Facility's discharge). Based on data in the record, this is a design condition that does not regularly occur in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

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.

Figure F-3. Criteria Calculation CTR



1. 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 88 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.

2. 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.

[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)

3. ADAPT. If step 2 results in:

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

   (B) Receiving water metal concentration greater than CTR criteria, then return to step 1, 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 1 through 3 above 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 iterative analyses for each CTR hardness-dependent metal result in the selected ambient hardness values shown in Table F-7, above. Using these actual receiving water sample hardness values to calculate criteria will result in effluent limitations that are protective under all ambient flow conditions. Ambient hardness values are used in the CTR equations to derive criteria and effluent limitations. As an example of the three-step iterative process, Table F-8 below summarizes the numeric results for copper based on an ambient hardness of 88 mg/L and a calculated ECA of 8.4 µg/L. Table F-9 below summarizes the numeric results for lead based on an ambient hardness of 80 mg/L and a calculated ECA of 2.4 µg/L. The analysis evaluated all flow conditions and the numeric values for the critical flow conditions are summarized in Tables F-8 and F-9, below. Ambient concentrations for copper and lead are calculated using the worst-case downstream ambient conditions, which allows for a conservative assumption that will ensure the receiving water complies with CTR criteria. Under the "check" step, worst-case ambient receiving water conditions are used to test whether the effluent discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the iterative analyses show that the ambient hardness values selected using the three-step iterative process result in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-8 and F-9 below summarize the critical flow conditions. There are no effluent limitations for lead as it does not demonstrate reasonable potential.

Table F-8. Verification of CTR Compliance for Copper Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Copper Concentration (µg/L)	Complies with CTR?
1Q10	37.1	4.0	4.0	Yes
7Q10	36.7	4.0	3.9	Yes
Max receiving water flow	34.2	3.7	3.7	Yes

Table F-8 Notes:

1. As discussed in section IV.C.2.c, above, this Order allows a chronic aquatic life mixing zone for copper. Therefore, per 40 C.F.R. section 131.38(c)(2)(i), the CTR chronic criteria for copper apply at the edge of the approved 60-foot chronic aquatic life mixing zone. In accordance with section 1.4 of the SIP, a chronic dilution factor of 2.45 was applied to the applicable CTR chronic criterion shows in Table F-7 to calculate the WQBEL's for copper. Considering no dilution for the CTR acute criterion, this Order includes an AMEL of 7.4 µg/L and MDEL of 12 µg/L for copper (see Attachment H for calculation of WQBEL's).

Table F-9. Verification of CTR Compliance for Lead Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Lead Concentration (µg/L)	Complies with CTR?
1Q10	37.1	0.90	0.89	Yes
7Q10	36.7	0.89	0.88	Yes
Max receiving water flow	34.2	0.81	0.81	Yes

3. Determining the Need for WQBEL's

CWA section 301(b)(1)(C) requires effluent limitations necessary to meet water quality standards, and 40 C.F.R. section 122.44(d) requires NPDES permits to include conditions that are necessary to achieve water quality standards established under section 303 of the CWA, including state narrative criteria for water quality. Federal regulations at 40 C.F.R 122.44(d)(1)(i) state, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." Additionally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available WLA's developed and approved for the discharge. The process to determine whether a WQBEL is required as described in 40 C.F.R. section 122.44(d)(1)(i) is referred to as a reasonable potential

analysis or RPA. Central Valley Water Board staff conducted RPA's for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. This section includes details of the RPA's for constituents of concern for the Facility. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board is not restricted to one particular RPA method; therefore, the RPA's have been conducted based on 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).**
40 C.F.R. section 122.44(d)(1)(vii) provides: "*When developing water quality-based effluent limits under* [section 122.44(d)(1)], *the permitting authority shall ensure that: (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards; and (B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available waste load allocation for the discharge prepared by the State and approved by EPA pursuant to* [Total Maximum Daily Loads regulations]." U.S. EPA construes 40 C.F.R. section 122.44(d)(1)(vii)(B) to mean that "*when WLA's are available, they must be used to translate water quality standards into NPDES permit limits*." 54 Fed. Reg. 23868, 23879 (June 2, 1989).

The Sacramento River within the Sacramento-San Joaquin Delta is subject to TMDL's for diazinon and chlorpyrifos and methylmercury, and WLA's under those TMDL's are available. The Central Valley Water Board developed WQBEL's for these pollutants pursuant to 40 C.F.R. section 122.44(d)(1)(vii), which does not require or contemplate an RPA.

i. **Diazinon and Chlorpyrifos**

(a) **WQO.** The Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos in the Sacramento-San Joaquin Delta 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-San Joaquin Delta was adopted by the Central Valley Water Board on 23 June 2006 and became effective on 10 October 2007.

The amendment modified Basin Plan Chapter III (Water Quality Objectives) to establish site-specific numeric objectives for diazinon and chlorpyrifos in the Delta waterways 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 Basin Plan states at section 4.5.5.3(6) that "*The waste load allocations (WLA) for all NPDES-permitted dischargers…shall not exceed the sum (S) of one (1) as defined below.*

$S = C_d/WQO_d + C_c/WQO_c \leq 1.0$

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."

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

(b) **RPA Results.** Diazinon was not detected in the effluent based on 24 samples collected between January 2017 and February 2020. Diazinon was not detected in the upstream receiving water based on eight samples collected between January 2017 and February 2020.

Chlorpyrifos was not detected in the effluent based on 24 samples collected between January 2017 and February 2020. Chlorpyrifos was not detected in the upstream receiving water based on eight samples collected between January 2017 and February 2020.

Although diazinon and chlorpyrifos were not detected in the effluent or receiving water, due to the TMDL for diazinon and chlorpyrifos in the Sacramento-San Joaquin Delta, WQBEL's for these constituents are required. The TMDL WLA applies to all NPDES dischargers to Delta waterways and will serve as the basis for WQBEL's for this Facility.

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

Average Monthly Effluent Limitation (AMEL)

$S_{AMEL} = C_{D\ M\text{-}avg}/0.079 + C_{C\ M\text{-}avg}/0.012 \leq 1.0$

Where:

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

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

Average Weekly Effluent Limitation (AWEL)

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

Where:

$C_{D\ W\text{-}avg}$ = 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 chlorpyrifos were not detected in the effluent. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ii. **Mercury**

(a) **WQO.** The Basin Plan contains fish tissue objectives for all Sacramento-San Joaquin Delta waterways listed in Appendix 43 of the Basin Plan, which states, "…*the average methylmercury*

concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length." The Delta Mercury Control Program contains aqueous methylmercury WLA's that are calculated to achieve these fish tissue objectives. Methylmercury reductions are assigned to dischargers with concentrations of methylmercury greater than 0.06 ng/L (the concentration of methylmercury in water to meet the fish tissue objective). The Facility is allocated 89 grams/year of methylmercury by 31 December 2030, as listed in Table IV-7B of the Basin Plan.

The CTR contains a human health criterion of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, in 40 C.F.R. part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through the use of the state's narrative criterion*." In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The State Water Board adopted Resolution 2017-0027 on 2 May 2017, which approved *Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Statewide Mercury Provisions). The Statewide Mercury Provisions establish a Sport Fish Water Quality Objective of an average 0.2 mg/kg methylmercury fish tissue concentration within a calendar year for waters with the beneficial uses of commercial and sport fishing (COMM), tribal tradition and culture (CUL), wildlife habitat (WILD), and marine habitat (MAR). This fish tissue objective corresponds to a water column concentration of 12 ng/L of total mercury for flowing water bodies (e.g., rivers, creeks, streams, and waters with tidal mixing). As shown in Table F-3, the beneficial uses of the Sacramento River within the Sacramento-San Joaquin Delta include COMM and WILD; therefore, the Sport Fish Water Quality Objective is applicable. However, the mercury water quality objectives established in the Statewide Mercury Provisions do not supersede the site-specific numeric mercury water quality objectives established in the Basin Plan, and section IV.D.1 of the Statewide Mercury Provisions specifies that the implementation provisions do not apply to dischargers

that discharge to receiving waters for which a mercury or methylmercury TMDL is established pertaining to the same beneficial use or uses. Consequently, this Order continues to implement the Basin Plan's Delta Mercury Control Program for the control of methylmercury in the receiving water.

(b) **RPA Results.** Section 1.3 of the SIP states, "*The RWQCB shall conduct the analysis in this section of each priority pollutant with an applicable criterion or objective, excluding priority pollutants for which a TMDL has been developed, to determine if a water quality-based effluent limitation is required in the Discharger's permit*." (emphasis added)

The maximum effluent concentration (MEC) for mercury was 9.1 ng/L based on 43 samples collected between January 2017 and February 2020. The maximum observed upstream receiving water mercury concentration was 9.5 ng/L based on eight samples collected between January 2017 and February 2020.

The MEC for methylmercury was 0.47 ng/L based on 38 samples collected between January 2017 and February 2020. The maximum observed upstream receiving water methylmercury concentration was 0.18 ng/L based on eight samples collected between January 2017 and February 2020.

(c) **WQBEL's.** The Basin Plan's Delta Mercury Control Program includes WLA's for POTW's in the Delta, including for the Discharger. This Order contains a final WQBEL for methylmercury based on the WLA. Effective 31 December 2030, the total calendar annual methylmercury load shall not exceed 89 grams.

(d) **Plant Performance and Attainability.** A compliance schedule in accordance with the State Water Board's Compliance Schedule Policy and the Delta Mercury Control Program has been established in section VI.C.7.c of this Order. The final WQBEL's for methylmercury are effective 31 December 2030.

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. **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 R5-2016-0020-01 included effluent limits for carbon tetrachloride based on the CTR criterion for the protection of human health.

(b) **RPA Results.** Carbon tetrachloride was not detected in the effluent based on 40 samples collected between January 2017 and February 2020. Carbon tetrachloride was not detected in the upstream receiving water based on eight samples collected between January 2017 and February 2020. Therefore, carbon tetrachloride in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health. Removal of the effluent limitations for carbon tetrachloride is in accordance with the federal anti-backsliding regulations (see section IV.D.3 of this Fact Sheet).

ii. **Methylene Chloride**

(a) **WQO.** The CTR includes a criterion of 4.7 µg/L for methylene chloride for the protection of human health for waters from which both water and organisms are consumed. Order R5-2016-0020-01 included effluent limits for methylene chloride based on the CTR criterion for the protection of human health.

(b) **RPA Results.** The MEC for methylene chloride was 1.0 µg/L based on 40 samples collected between January 2017 and February 2020. Methylene chloride was not detected in the upstream receiving water based on eight samples collected between January 2017 and February 2020. Therefore, methylene chloride in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health. Removal of the effluent limitations for methylene chloride is in accordance with the federal anti-backsliding regulations (see section IV.D.3 of this Fact Sheet).

iii. **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. In addition, the Basin Plan contains numeric site-specific water quality objectives for electrical conductivity for the Sacramento River at Emmaton in the vicinity of the discharge. The site-specific objectives for electrical conductivity are for the protection of the agricultural supply beneficial use.

There are no water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, or sulfate. However, water quality criteria for chloride are available for interpretation of the Basin Plan's narrative toxicity objective. The U.S. EPA National Ambient Water Quality Criteria (NAWQC) for Chloride recommends acute and chronic criteria for the protection of aquatic life.

Table F-10. Salinity Water Quality Criteria/Objectives

Parameters	Bay-Delta Plan WQO	Secondary MCL	U.S. EPA NAWQC	Maximum Calendar Annual Average Effluent Concentration	Maximum Daily Effluent Concentration
EC (µmhos/cm) or TDS (mg/L)	EC 700 April – August EC 1,000 September – March or TDS N/A	EC 900, 1,600, 2,200 or TDS 500, 1,000, 1,500	N/A	EC 1,057 or TDS 529	EC 1,300 or TDS 640
Sulfate (mg/L)	N/A	250, 500, 600	N/A	100	130
Chloride (mg/L)	N/A	250, 500, 600	860 1-hour / 230 4-day	102	130

Table F-10 Notes:

1. **Bay-Delta Plan Water Quality Objectives**. The Bay-Delta Plan includes water quality objectives for electrical conductivity in the Sacramento River at Emmaton (see Table F-11, below).

2. **Secondary MCL's.** Secondary MCL's are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

(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 site-specific water quality objectives for electrical conductivity for the Sacramento River at Emmaton based on the 2006 Bay-Delta Plan. The electrical conductivity objectives vary depending on the water year type and are applied as 14-day running averages of the mean daily electrical conductivity, as detailed in Table F-11, below.

The Bay-Delta Plan, Chapter IV – Program of Implementation, requires that the electrical conductivity objectives for protection of the agricultural supply beneficial use be implemented through water rights actions. Consequently, compliance with the Bay-Delta Plan's electrical conductivity objectives is met through reservoir operations by DWR and USBR.

Table F-11. Water Quality Objectives for Electrical Conductivity

Date	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critical Water Year
1 April – 14 June	450	450	450	450	2,780
15 June – 19 June	450	450	450	1,670	2,780
20 June – 30 June	450	450	1,140	1,670	2,780
1 July – 15 August	450	630	1,140	1,670	2,780

(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.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. EC, TDS, sulfate, and chloride are not a priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. The SIP RPA procedures have been used to assess

whether the discharge exhibits reasonable potential to cause or contribute to an exceedance of the water quality objectives for chloride. However, due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgement in determining the appropriate method for conducting the RPA for electrical conductivity, total dissolved solids, and sulfate.

For sulfate, the most stringent objective is the site-specific Basin Plan objective based on the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCL's are drinking water standards contained in CCR, Title 22. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA for sulfate was conducted based on the calendar annual average effluent concentrations. Calculating a maximum annual average concentration considers variability in the data, per 40 C.F.R. section 122.44(d)(1)(ii).

For electrical conductivity and total dissolved solids, the RPA was conducted using U.S. EPA's recommended mass-balance approach to determine the expected critical downstream receiving water concentration using a steady-state approach.[1] This downstream receiving water concentration is then compared to the applicable water quality objectives to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion. This approach allows assimilative capacity and dilution to be factored into the RPA. The critical downstream receiving water concentration is calculated using the following equation:

$C_r = (Q_sC_s + Q_cC_d) / (Q_s + Q_d)$ (Equation 2)

Where:

Q_s = Critical stream flow

Q_d = Critical effluent flow from discharge flow data (maximum permitted discharge)

C_s = Critical upstream pollutant concentration

C_d = Critical effluent pollutant concentration

[1] U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010)

C_r = Critical downstream receiving water pollutant concentration

The water quality objectives for electrical conductivity and total dissolved solids are long-term objectives. Consistent with Order R5-2016-0020-01, this Order uses a critical stream flow (Qs) of 5,060 cfs (3,270 MGD) to conduct the RPA for salinity parameters, which represents the 1Q10 receiving water flow. The critical effluent flow (Qd) is 181 MGD, which is the maximum permitted effluent flow allowed in this Order. The critical effluent pollutant concentration (Cd) was determined using statistics recommended in the TSD for statistically calculating the projected maximum concentration in the effluent (i.e., Table 3-1 of the TSD using the 99 percent probability basis and 99 percent confidence level).

(1) **Chloride.** Based on 24 effluent sample collected from January 2017 through February 2020, the maximum observed effluent chloride concentration was 130 mg/L. These levels do not exceed the Secondary MCL or NAWQC. Background concentrations in the Sacramento River ranged from 1.6 mg/L to 6.0 mg/L based on eight samples collected by the Discharger from January 2017 through February 2020.

(2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows a maximum observed annual average electrical conductivity of 1,057 µmhos/cm, with a range from 600 µmhos/cm to 1,300 µmhos/cm. As discussed above, the receiving water has been consistently in compliance with the Bay-Delta objectives, resulting in available assimilative capacity for consideration in the RPA. 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.

The projected maximum effluent electrical conductivity concentration (Cd) is 1,323 µmhos/cm based on 349 samples collected from January 2017 through February 2020. Receiving water electrical conductivity measured at Emmaton was evaluated from 2016 through 2018 (i.e., the term of the existing permit when water year data is available). The day with the minimum assimilative capacity occurred on 19 June 2016 when the applicable objective was 450 µmhos/cm and the 14-day running

average of the mean daily electrical conductivity in the Sacramento River was 388 µmhos/cm. This represents a reasonable worst-case scenario for evaluating the impact of the discharge on the receiving water.

Using Equation 2, above, the calculated critical downstream receiving water electrical conductivity concentration (Cr) is 437 µmhos/cm, which does not exceed the Bay-Delta Plan objective of 450 µmhos/cm. Therefore, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the applicable water quality objectives for electrical conductivity.

Total dissolved solids concentrations in the effluent ranged from 280 mg/L to 640 mg/L, with a maximum annual average of 529 mg/L, based on 330 samples collected from January 2017 through February 2020. Background concentrations in the Sacramento River ranged from 62 mg/L to 120 mg/L based on eight samples collected by the Discharger from January 2017 through February 2020. The receiving water has been consistently in compliance with the Secondary MCL resulting in available assimilative capacity for consideration in the RPA. Considering the large dilution and assimilative capacity in the receiving water, the small increase in total dissolved solids caused by the discharge does not result in a reasonable potential to cause or contribute to an exceedance of the objectives for total dissolved solids in the receiving water.

The projected maximum effluent total dissolved solids concentration (Cd) is 652 mg/L based on 330 samples collected between January 2017 and February 2020. The critical upstream pollutant concentration (Cs) is 120 mg/L based on eight receiving water total dissolved solids samples collected between January 2017 and February 2020.

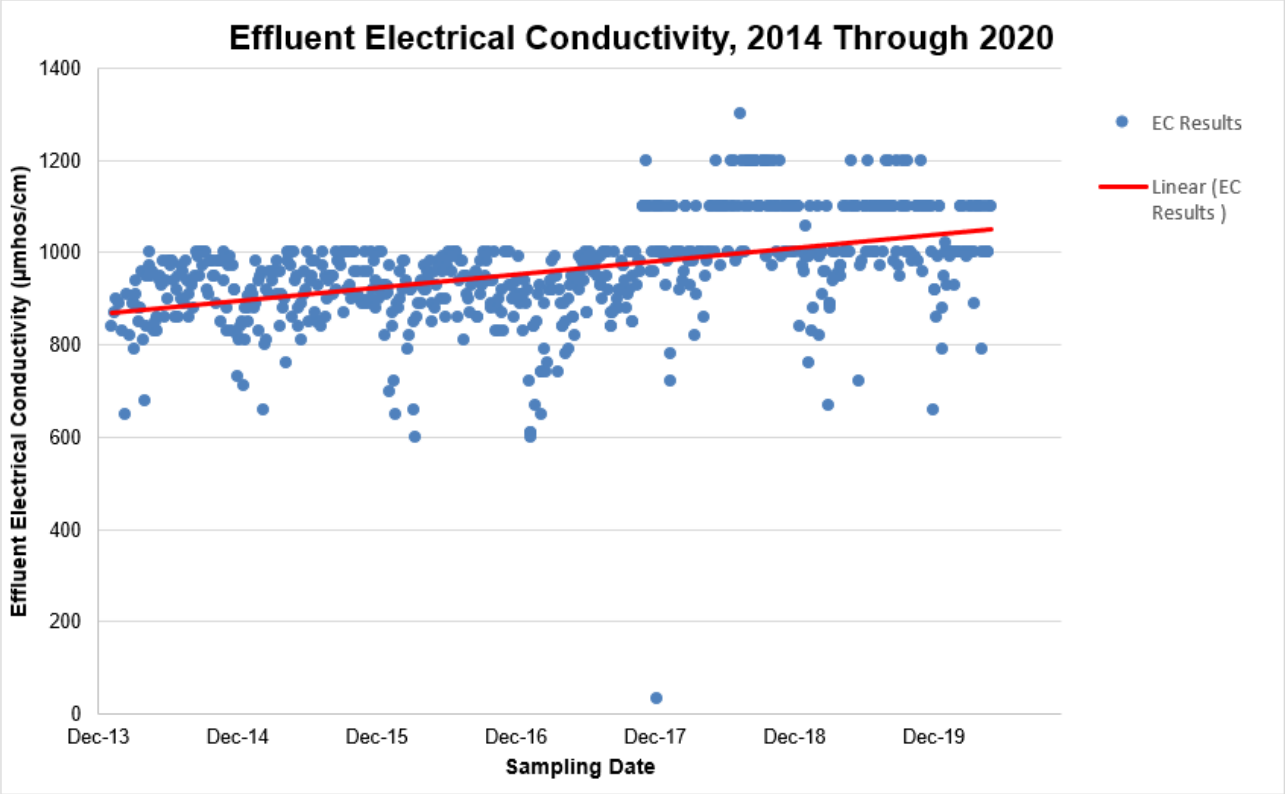
Using Equation 2, above, the calculated critical downstream receiving water total dissolved solids concentration (Cr) is 137 mg/L, which does not exceed the Secondary MCL. Therefore, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the applicable water quality objectives for total dissolved solids.

(3) **Sulfate.** Based on 24 effluent samples collected from January 2017 through February 2020, the maximum observed effluent sulfate concentration was 130 mg/L, with a maximum annual average of 100 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 3.2 mg/L to 14 mg/L based on eight samples collected by the Discharger from January 2017 through February 2020.

Based on the relatively low reported salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of the applicable water quality objectives. However, since the Discharger discharges to the Sacramento River within the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Therefore, this Order includes a performance-based effluent limitation for electrical conductivity.

Order R5-2016-0020-01 included a performance-based annual average effluent limitation of 1,139 µmhos/cm. However, due to ongoing water conservations efforts during the term of Order R5- 2016-0020-01, the Facility has experienced increasing effluent salinity concentrations (see Figure F-4, below). The planned installation of the BNR process is expected to help control salinity levels in the effluent; however, the Central Valley Water Board is expecting effluent salinity concentrations to continue to increase over the next permit term due to increasing water conservation efforts within the Discharger’s service area.

Figure F-4. Historical Effluent Electrical Conductivity Monitoring Results



As shown in Figure F-4, despite prevention efforts outlined in the Discharger's salinity evaluation and minimization plan, effluent electrical conductivity concentrations have exhibited an increasing trend since 2014 and the Discharger can no longer consistently comply with the performance-based annual average effluent limitation of 1,139 µmhos/cm. In their ROWD, the Discharger requested an increased performance-based electrical conductivity effluent limitation based on the projected annual average concentrations in 2025. Based on a 10 percent increase in effluent electrical conductivity concentrations and factoring in the installation of the BNR treatment system, the projected 2025 annual average effluent electrical conductivity concentration is 1,317 µmhos/cm. Therefore, this Order revises the performance-based annual average effluent limitation for electrical conductivity from 1,139 µmhos/cm to 1,300 µmhos/cm based on the projected annual average electrical conductivity concentrations in 2025. As described in section IV.D.4 of this Fact Sheet, relaxing the performance-based annual average electrical conductivity effluent limitation in this Order will result in BPTC necessary to assure that a pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the state will be maintained, and is consistent with the antidegradation provisions of

40 C.F.R. section 131.12 and the State Antidegradation Policy. Based on the sample results for electrical conductivity in the effluent collected from January 2017 through February 2020, it appears the Discharger can consistently comply with the effluent limit. This Order also requires the Discharger to continue to implement a salinity evaluation and minimization plan in order to ensure the continued control of the discharge of salinity from the Facility to the Sacramento River.

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. **Benzo(a)anthracene**

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for benzo(a)anthracene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between January 2017 and February 2020, the MEC for benzo(a)anthracene exceeds the applicable CTR criterion. Benzo(a)anthracene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

Table F-12 Data Summary for Benzo(a)anthracene

MEC (µg/L)	No. of Samples	No. of Non-Detect	No. of DNQ	Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
0.050	43	42	1	<0.020	0.020	5.0	5.0

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) 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.

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

(4) 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.

(5) 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.

(6) 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 5.0 µg/L for benzo(a)anthracene. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 43 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for benzo(a)anthracene 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 benzo(a)anthracene will be required monthly for one year, beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP, Attachment E. 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. **Benzo(b)fluoranthene**

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for benzo(b)fluoranthene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between January 2017 and February 2020, the MEC for benzo(b)fluoranthene exceeds the applicable CTR criterion. Benzo(b)fluoranthene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

Table F-13 Data Summary for Benzo(b)fluoranthene

MEC (µg/L)	No. of Samples	No. of Non-Detect	No. of DNQ	Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
0.040	43	42	1	<0.020	0.020	10	10

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) 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.

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

(4) 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.

(5) 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.

(6) 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 10 µg/L for benzo(b)fluoranthene. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 43 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for benzo(b)fluoranthene 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

benzo(b)fluoranthene will be required monthly for one year, beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP, Attachment E. 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. **Benzo(k)fluoranthene**

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for benzo(k)fluoranthene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between January 2017 and February 2020, the MEC for benzo(k)fluoranthene exceeds the applicable CTR criterion. Benzo(k)fluoranthene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

Table F-14 Data Summary for Benzo(k)fluoranthene

MEC (µg/L)	No. of Samples	No. of Non-Detect	No. of DNQ	Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
0.070	43	42	1	<0.020	0.020	2.0	2.0

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) 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.

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

(4) 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.

(5) 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.

(6) 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 2.0 µg/L for benzo(k)fluoranthene. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 43 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for benzo(k)fluoranthene 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 benzo(k)fluoranthene will be required monthly for one year, beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP,

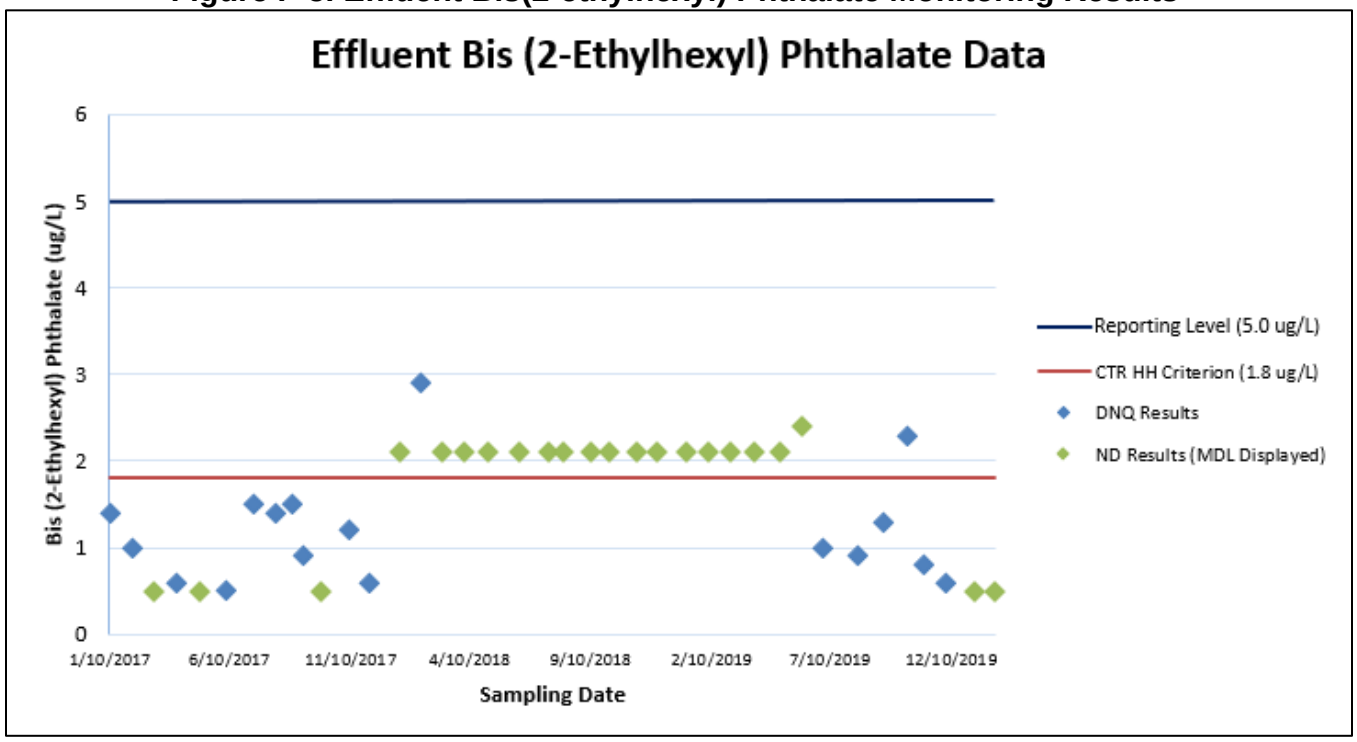
Attachment E. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

iv. **Bis(2-ethylhexyl) Phthalate**

(a) **WQO.** The CTR includes a criterion of 1.8 µg/L for bis(2-ethylhexyl) phthalate for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the figure below, all effluent bis(2-ethylhexyl) phthalate samples collected from January 2017 through February 2020 were either non-detect or detected but not quantified (DNQ). Bis(2-ethylhexyl) phthalate was not detected in the upstream receiving water, with a method detection limit of either 2.1 µg/L or 0.5 µg/L, based on eight samples collected from January 2017 through February 2020. Figure F-5, below, shows effluent bis(2-ethylhexyl) phthalate sample results. Non-detect values are represented by the applicable method detection limit and the DNQ results are estimated values.

Figure F-5. Effluent Bis(2-ethylhexyl) Phthalate Monitoring Results



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) 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.

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

(4) 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.

(5) 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.

(6) 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 5.0 µg/L for bis(2-ethylhexyl) phthalate. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 36 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for bis(2-ethylhexyl) phthalate is inappropriate and insufficient to determine reasonable potential under the SIP.

(c) **WQBEL's.** Order R5-2016-0020-01 contains an average monthly effluent limitation (AMEL) of 8.9 µg/L and maximum daily effluent limitation (MDEL) of 20 µg/L for bis(2-ethylhexyl) phthalate. These water quality-based effluent limitations were developed with the allowance of a human carcinogen mixing zone and considering Facility performance.

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 backsliding contained in CWA sections 402(o)(2) or 303(d)(4). Section 303(d)(4) allows that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy. 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 which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance. As discussed above, the effluent data for bis(2-ethylhexyl) phthalate is inappropriate and insufficient to determine reasonable potential under the SIP, therefore, the insufficient data does not provide new information to satisfy the exceptions to the anti-backsliding provisions contained in CWA sections 402(o)(2)(B)(i) or 303(d)(4) and justify less stringent effluent limitations.

Since the effluent data for bis(2-ethylhexyl) phthalate is inappropriate and insufficient to conduct a reasonable potential analysis and does not satisfy the exceptions provided in the federal anti-backsliding requirements, this Order retains an AMEL of 8.9 µg/L and MDEL of 20 µg/L for bis(2-ethylhexyl) phthalate from Order R5-2016-0020-01, which are based on the allowance of a mixing zone and considering Facility performance. As discussed further in section IV.C.2.c of this Fact Sheet, a human carcinogen mixing zone may be allowed in

the development of the WQBEL's for bis(2-ethylhexyl) phthalate in this Order.

This Order also requires the implementation of the Sufficiently Sensitive Methods Rule (SSM) rule which will require sampling using laboratory analytical methods that are sufficiently sensitive for bis(2-ethylhexyl) phthalate where the reporting levels are at or below the CTR criterion. The monitoring data collected over the upcoming permit term using a reporting level that complies with the SSM Rule will provide sufficient data to conduct a reasonable potential analysis for bis(2-ethylhexyl) phthalate.

(d) **Plant Performance and Attainability.** The effluent limitations for bis(2-ethylhexyl) phthalate are based on Facility performance. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. Chrysene

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for chrysene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between January 2017 and February 2020, the MEC for chrysene exceeds the applicable CTR criterion. Chrysene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

Table F-15 Data Summary for Chrysene

MEC (µg/L)	No. of Samples	No. of Non-Detect	No. of DNQ	Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
0.060	43	42	1	<0.020	0.020	5.0	5.0

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) 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.

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

(4) 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.

(5) 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.

(6) 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 5.0 µg/L for chrysene. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 43 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for chrysene 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 chrysene will be required monthly for one year, beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP, Attachment E. 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.

vi. **Dibenzo(a,h)anthracene**

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for dibenzo(a,h)anthracene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** As shown in the table below, based on data collected between January 2017 and February 2020, the MEC for dibenzo(a,h)anthracene exceeds the applicable CTR criterion. Dibenzo(a,h)anthracene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

Table F-16 Data Summary for Dibenzo(a,h)anthracene

MEC (µg/L)	No. of Samples	No. of Non-Detect	No. of DNQ	Background (µg/L)	Lowest MDL (µg/L)	Lowest RL (µg/L)	SIP ML (µg/L)
0.090	43	42	1	<0.020	0.020	0.10	0.10

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) 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.

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

(4) 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.

(5) 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.

(6) 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 0.10 µg/L for dibenzo(a,h)anthracene. The Discharger used an analytical method that was as sensitive as the ML required by the SIP for all 43 samples. The effluent results were all non-detects or estimated values (i.e., detected by not quantified). Therefore, the effluent data for dibenzo(a,h)anthracene 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 dibenzo(a,h)anthracene will be required monthly for one year,

beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP, Attachment E. 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.

vii. **Indeno(1,2,3-cd)pyrene**

(a) **WQO.** The CTR includes a criterion of 0.0044 µg/L for indeno(1,2,3-cd)pyrene for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for indeno(1,2,3-cd)pyrene was 0.060 µg/L, based on 43 samples collected from January 2017 through February 2020. Indeno(1,2,3-cd)pyrene was not detected in the upstream receiving water based on eight samples collected from January 2017 through February 2020.

The sample yielding the MEC for indeno(1,2,3-cd)pyrene was collected on 6 November 2019. Excluding the 6 November 2019 sampling event, indeno(1,2,3-cd)pyrene has not been detected in the effluent based on sampling conducted by the Discharger since February 2012.

According to the laboratory reports corresponding to the 6 November 2019 effluent indeno(1,2,3-cd)pyrene sample, there were no quality assurance (QA) issues impacting the result. Indeno(1,2,3-cd)pyrene is typically found in fossil fuels and occurs ubiquitously in products of incomplete combustion. Additionally, indeno(1,2,3-cd)pyrene is usually found in soils, groundwater, and surface waters at hazardous waste sites. Indeno(1,2,3-cd)pyrene was not detected in the influent sample collected on 6 November 2019, which indicates that the 6 November 2019 effluent reading was not the result of an illicit discharge into the Facility's influent.

Section 1.2 of the SIP states, "*The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy*." The 6 November 2019 effluent sample appears to be an outlier compared to the remainder of the effluent data, which indicates possible lab contamination. Therefore, the Central Valley Water Board concludes that the 6 November 2019 result is not representative of the discharge and is insufficient for use in the RPA.

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 indeno(1,2,3-cd)pyrene in the effluent will be required monthly for one year, beginning 1 January 2022, and every other calendar year thereafter, as part of the effluent and receiving water characterization described in section IX.C of the MRP, Attachment E. 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, settleable solids, temperature, total coliform organisms, and TSS. 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 2013 NAWQC for the protection of freshwater aquatic life for total ammonia (2013 Criteria), recommends acute (1-hour average; criteria maximum concentration or CMC) 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 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including toxicity data on sensitive freshwater unionid mussels, non-pulmonary snails, and other freshwater organisms. The inclusion of new toxicity data for unionid mussels resulted in substantially more stringent criteria. In many cases, current wastewater treatment technologies are not capable of complying with effluent limitations based on the more stringent criteria.

The Central Valley Clean Water Association (CVCWA) organized a coordinated effort for POTW's within the Central Valley Region, the Freshwater Mussel Collaborative Study for

Wastewater Treatment Plants, to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria could be implemented in the Central Valley Region. Phase I, completed in June 2015, included a State of Knowledge Report developed by a consultant team consisting of Robertson-Bryan, Inc., Larry Walker Associates, and Pacific EcoRisk. The collaborative study involved policy and permitting discussions among representatives from the Central Valley Water Board, U.S. EPA, United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and regional mussel experts regarding the implementation of the 2013 Criteria in POTW NPDES permits. The discussions evaluated permitting approaches that provide reasonable protection of aquatic life beneficial uses, including protection of freshwater mussels.

The State of Knowledge Report explained that the species of freshwater mussels in waters within the Central Valley Region are different than what U.S. EPA used in the toxicity dataset for development of the 2013 Criteria. The State of Knowledge Report indicated that one resident freshwater mussel species was shown to not be as sensitive as the eastern mussel species used to derive the 2013 Criteria. However, the sensitivity of the other Central Valley Region mussel species was unknown.

Initial work under this project indicated the need to understand whether freshwater mussels are present or absent in POTW receiving waters in order to properly permit the discharge of ammonia in NPDES permits. Hence, a Phase II of the CVCWA study was conducted that developed and validated an effective environmental DNA (eDNA) method for determining the presence/absence of the three freshwater mussel genera in water bodies of the Central Valley. Phase IIb of the study involved further study and application of the eDNA methodology.

CVCWA submitted the Phase IIc Freshwater Mussel Collaborative Study for Wastewater Treatment Plants: Ammonia Criteria Recalculation Final Report, dated January 2020 (Criteria Recalculation Report) developed by the same consultant team. The Criteria Recalculation Report provides toxicity studies demonstrating all freshwater mussel species present in Central Valley Region waters are less sensitive than the eastern species used to develop the 2013 Criteria.

U.S. EPA developed the Guidelines for Deriving Numerical Aquatic Site-Specific Water Quality Criteria by Modifying

National Criteria (EPA-600/S3-84-099 December 1984) that provides a Recalculation Procedure. U.S. EPA also developed the Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria (EPA-823-R-13-001, April 2013) to guide the development of a site-specific toxicity dataset that is appropriate for deriving a site-specific aquatic life criterion, by modifying the national toxicity dataset for the pollutant of concern through correcting, adding, and/or deleting test results.

The Criteria Recalculation Report implemented U.S. EPA's Recalculation Procedure utilizing toxicity bioassays conducted on resident mussel species to replace the toxicity data for the eastern mussel species in the national dataset to develop site-specific ammonia criteria for waters within the Central Valley Region, including all surface waters in the Sacramento River, San Joaquin River, and Tulare Lake Basin Plans.

A draft Criteria Recalculation Report was provided to the Central Valley Water Board, U.S. EPA Region 9, U.S. EPA Office of Science and Technology, USFWS, and the Nature Conservancy. Comments were provided by Central Valley Water Board staff and U.S. EPA Office of Science and Technology. U.S. EPA agreed with the recalculation procedure for developing site-specific acute criterion. However, U.S. EPA recommended a more conservative approach for utilizing the acute-to-chronic ratio procedure for developing the site-specific chronic criterion. The final Criteria Recalculation Report addressed the comments and provided revised equations for the chronic criterion in Appendix D.

The Basin Plans' Policy for Application of Water Quality Objectives requires the Central Valley Water Board to consider, "…*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations…In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective*."

The Central Valley Water Board finds that the site-specific ammonia criteria provided in the January 2020 Criteria Recalculation Report implement the Basin Plan's narrative

toxicity objective to protect aquatic life beneficial uses of the receiving water. This Order implements the site-specific acute and chronic criteria for ammonia provided by the January 2020 Criteria Recalculation Report, with the adjustments to the chronic criteria recommended by U.S. EPA.

Site-specific Criteria for the Sacramento River. Similar to the U.S. EPA 2013 Criteria, the recalculated site-specific criteria developed in the Criteria Recalculation Report for the acute and chronic criteria are presented based on equations that vary according to pH and temperature. The pH and temperature speciation relationships developed by U.S. EPA were utilized without modification. Equations were developed for situations where freshwater mussels are present and where they are absent. In this case, for the Sacramento River, freshwater mussels have been assumed to be present. In addition, the recalculated criteria include equations that provide enhanced protection for important salmonid species in the genus *Oncorhynchus*, that can be implemented for receiving waters where salmonid species are present. Because the Sacramento River has a beneficial use of cold freshwater habitat and the presence of salmonids in the Sacramento River is well-documented, the criteria equations for waters where salmonids are present were used.

The acute (1-hour average) criterion or CMC was calculated using paired effluent pH and temperature data, collected during the period from January 2017 through February 2020. The temperature of the receiving water varies seasonally. Therefore, seasonal water quality criteria were calculated for the winter season (1 November through 31 March) and the summer season (1 April through 31 October). For the winter season, the most stringent CMC of 24.0 mg/L (ammonia as N) calculated using the paired effluent pH and temperature data from 1 November through 31 March has been implemented in this Order. For the summer season, the most stringent CMC of 15.3 mg/L (ammonia as N) calculated using the paired effluent pH and temperature data from 1 April through 31 October has been implemented in this Order.

The chronic (30-day average) criterion or CCC was calculated using paired effluent pH and temperature data, collected during the period from January 2017 through December 2019. For the winter season, the most stringent 30-day rolling average CCC of 2.47 mg/L (ammonia as N) has been implemented in this Order. For the summer season, the most stringent 30-day rolling

average CCC of 2.21 mg/L (ammonia as N) has been implemented in this Order.

The chronic (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 2.43 mg/L (ammonia as N) for the winter season, the 4-day average concentration that should not be exceeded is 6.08 mg/L (ammonia as N). Based on the 30-day CCC of 2.14 mg/L (ammonia as N) for the summer season, the 4-day average concentration that should not be exceeded is 5.35 mg/L (ammonia 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. section122.44(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 does not currently use 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. 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 site-specific acute and chronic criteria for ammonia provided by the January 2020 Criteria Recalculation Report. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBEL's are required.

(c) **WQBEL's.** The Central Valley Water Board calculates WQBEL's in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the 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 final AMEL's and AWEL's for ammonia of 2.4 mg/L and 3.0 mg/L, respectively, applicable from 1 November through 31 March, and 2.1 mg/L and 2.5 mg/L, respectively, from 1 April through 31 October, based on the NAWQC.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 43 mg/L is greater than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is not feasible and appears to put the Discharger in immediate non-compliance with the ammonia final effluent limitations. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Discharger submitted an infeasibility analysis dated August 2010. On 8 September 2020 the Discharger submitted an infeasibility analysis and requested a Time Schedule Order to extend the compliance schedule in order to allow additional time for the Discharger to complete upgrades to the Facility. Time Schedule Order (TSO) R5-2020-0904 was issued by the Executive Officer on 4 December 2020, which provides a schedule to achieve compliance with final effluent limitations for ammonia by 1 June 2022.

ii. **Chlorine Residual**

(a) **WQO.** U.S. EPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore 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 (sodium hypochlorite) for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses sodium bisulfite 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.** U.S. EPA's TSD contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on U.S. EPA's NAWQC, which implements

the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) **Plant Performance and Attainability.** The Discharger uses sodium bisulfite 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.

iii. **Chlorodibromomethane**

(a) **WQO.** The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2016-0020-01 included effluent limitations for chlorodibromomethane based on the CTR human health criterion.

(b) **RPA Results.** The MEC for chlorodibromomethane was 0.30 µg/L based on 40 samples collected between January 2017 and February 2020. Chlorodibromomethane was not detected in the upstream receiving water based on ten samples collected between January 2017 and July 2020. Although the effluent concentrations of chlorodibromomethane did not exceed the CTR criterion, based on performance by other similar facilities, effluent concentrations of chlorodibromomethane are expected to increase upon completion of upgrades to provide ammonia and nitrate removal. 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 55:1 is allowed in the development of the WQBEL's for chlorodibromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 22 µg/L and MDEL of 44 µg/L for chlorodibromomethane.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 0.30 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible. However, based on performance from other facilities, compliance may not be feasible during the final stages of facility improvements. TSO R5-2020-0904,

issued by the Executive Officer on 4 December 2020, provides a compliance schedule to achieve compliance with final effluent limitations for chlorodibromomethane by 1 November 2023.

iv. **Copper**

(a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute 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 12 µg/L and 8.4 µg/L, respectively, as total. As dissolved concentrations, the applicable acute and chronic criteria for copper in the receiving water are 12 µg/L and 8.0 µg/L, respectively.

The Basin Plan includes a site-specific objective for the Sacramento-San Joaquin Delta of 10 µg/L (dissolved) as a maximum concentration. Using the default U.S. EPA translator, the Basin Plan objective for copper is 10.4 µg/L (total).

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

Order R5-2016-0020-01 included effluent limitations for copper based on the CTR criteria for the protection of freshwater aquatic life.

(b) **RPA Results.** The MEC for total copper was 17 µg/L (as total) based on 121 samples collected from January 2017 through February 2020; however, the Central Valley Water Board finds that this sample result is not representative of typical discharge conditions. The effluent copper sample result of 17 µg/L was collected on
8 January 2020. Based on the remaining effluent copper data collected from January 2017 through February 2020, the result of 17 µg/L exceeded the 99.9th percentile and was greater than two standard deviations from the mean. Furthermore, there was

no evidence of high copper sources in the Facility's influent on 8 January 2020 and there were no unusual pretreatment or operating conditions at the Facility.

Section 1.2 of the SIP states, "*The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy*." Since the receiving water copper result for the sampling event conducted on 8 January 2020 is unusually high compared to the rest of the effluent copper results collected over the term of Order R5-2016-0020-01, the Central Valley Water Board concludes that the 8 January 2020 result is not representative of the discharge and is therefore insufficient for use in the RPA. Excluding the 8 January 2020 sample, the MEC for total copper was 10 µg/L.

The maximum observed upstream receiving water copper concentration was 9.3 µg/L (as total) based on eight samples collected from January 2017 through February 2020; however, based on historical upstream receiving water samples collected by the Discharger since 2005, the maximum observed upstream receiving water dissolved copper concentration was 5.10 µg/L. Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

(c) **WQBEL's.** The receiving water contains assimilative capacity for copper and a chronic aquatic life mixing zone has been allowed, as discussed further in section IV.C.2.c of this Fact Sheet. For copper, the dynamic modeling approach described in section IV.C.4.f has not been used to calculate the WQBEL's. Instead, the Discharger's model was used to determine the dilution factor at the edge of the 60-foot chronic aquatic life mixing zone and the long-term average was calculated using the SIP's steady-state modeling approach. Considering the allowance of a chronic aquatic life mixing zone and no mixing zone for acute criteria, the WQBEL's for copper are an AMEL of 7.4 µg/L and MDEL of 12 µg/L based on the CTR criteria for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 10 µg/L is less than the applicable MDEL and the maximum monthly average concentration of 6.63 µg/L is less than the applicable AMEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. **Cyanide**

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

The Basin Plan includes a site-specific objective for the Sacramento-San Joaquin Delta of 10 µg/L as a maximum concentration.

Footnote 4, page 3 of the Introduction of the SIP states, "*If a water quality objective and a CTR criterion are in effect for the same priority pollutant, the more stringent of the two applies*." The Basin Plan objective cannot be directly compared to the CTR criteria to determine the most stringent objective because they have different averaging periods. In this situation, the RPA has been conducted considering both the CTR criteria and the Basin Plan site-specific objective.

Order R5-2016-0020-01 included effluent limitations for cyanide based on the CTR criteria for the protection of freshwater aquatic life.

(b) **RPA Results.** The MEC for cyanide was 7.5 µg/L based on 75 samples collected from January 2017 through February 2020. Cyanide was not detected in the upstream receiving water based on eight samples collected between January 2017 and February 2020. Therefore, cyanide in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

(c) **WQBEL's.** The receiving water contains assimilative capacity for cyanide and a chronic aquatic life criteria mixing zone has been allowed, as discussed further in section IV.C.2.c of this Fact Sheet. For cyanide, the dynamic modeling approach described in section IV.C.4.f has been used to calculate the WQBEL's. Considering the allowed chronic aquatic life mixing zone and no mixing zone for acute criteria, this Order contains a final AMEL and MDEL for cyanide of 11 µg/L and 22 µg/L, respectively, based on the CTR criteria for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 7.5 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. **Dichlorobromomethane**

(a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2016-0020-01 included effluent limitations for dichlorobromomethane based on the CTR human health criterion.

(b) **RPA Results.** The MEC for dichlorobromomethane was 1.7 µg/L based on 40 samples collected between January 2017 and February 2020. Dichlorobromomethane was not detected in the upstream receiving water based on ten samples collected between January 2017 and July 2020. 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 55:1 is allowed in the development of the WQBEL's for dichlorobromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 31 µg/L and MDEL of 70 µg/L for dichlorobromomethane.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 1.7 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible. However, based on performance from other facilities, compliance may not be feasible during the final stages of facility improvements. TSO R5-2020-0904, issued by the Executive Officer on 4 December 2020, provides a compliance schedule to achieve compliance with final effluent limitations for dichlorobromomethane by 1 November 2023.

vii. **Nitrate and Nitrite**

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

U.S. EPA has developed a Primary MCL and an MCL goal of 1.0 mg/L for nitrite (measured as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

Order R5-2016-0020-01 included effluent limitations for nitrate plus nitrite, as a single parameter, based on the Primary MCL.

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

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

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

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

(c) **WQBEL's.** The receiving water contains assimilative capacity for nitrate plus nitrite in the near-field; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a mixing zone/dilution credit is 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, total (as N) of 16.1 mg/L and 22 mg/L, respectively, which are based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use.

The allowance of a mixing zone and dilution to calculate the WQBELs for nitrate plus nitrite results in the relaxation of the concentration-based effluent limitations that were contained in previous Order R5-2016-0020-01. The Central Valley Water Board is concerned regarding the loading of nutrients, including nitrate and nitrite, that may impact biologically sensitive aquatic resources and critical habitats, as are present in the Sacramento-San Joaquin Delta (Delta) and the impact of nutrients on the use of the water for municipal uses. To ensure compliance with the State and Federal antidegradation requirements, and to protect the beneficial uses of the receiving water that can be impacted by nutrient loading, this Order establishes an average monthly mass-based effluent limitation of 15,095 lbs/day that was calculated based on the AMEL from previous Order R5-2016-0020-01, which was established based on the Primary MCL without the consideration of dilution. Therefore, the loading of nutrients in the form of nitrate and nitrite is not allowed to increase in this Order.

(d) **Plant Performance and Attainability.** Upon full implementation of the BNR upgrades the Discharger expects the Facility can comply with the final effluent limitations for

nitrate plus nitrite. However, the Discharger may not be able to consistently comply with the final effluent limitations for nitrate plus nitrite during the start up of the BNR upgrades due to partial nitrification and de-nitrification while the existing pure oxygen activated sludge treatment system is phased out. TSO R5-2020-0904, was issued by the Executive Officer on 4 December 2020 which provides a compliance schedule to achieve compliance with the final effluent limitations for nitrate plus nitrite by **1 June 2022**.

viii. **Pathogens**

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

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

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life and constitute a threatened pollution and nuisance under CWC section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBEL's are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic*

pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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 beneficial uses of the South Yuba River include MUN, water contact recreation, and agricultural irrigation supply. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DDW in Title 22 from May through October. The Discharger shall also operate the filters in all other months.

The Central Valley Water Board generally follows a November 1980 general recommendation by DDW on the appropriate levels of disinfection for protection of body-contact

recreation in waters downstream of a sewage treatment plant discharge. The general DDW recommendation allows a discharge of secondary treatment with chlorination when there is a minimum of 20-to-1 dilution (river to discharge), and suggests tertiary filtration when less than 20-to-1 dilution is available. The DDW recommendations are a "rule of thumb" and are not regulation. Site-specific disinfection recommendations are often sought from DDW in preparing NPDES permits. In this instance, DDW has recommended Title 22 or equivalent filtration and disinfection during May through October, which includes the periods of highest anticipated body contract recreation. DDW has also concurred that during November through April, this stringent level of treatment is not necessary. The Discharger will, however, filter treated effluent at Title 22-equivalent rates up to the design capacity of the filters, resulting in Title 22 equivalent filtration of the great majority of all flows year-round, even at full permitted discharge rates. The seasonal differences allow the Discharger to avoid unnecessary costs to provide filtration of peak flows. DDW has concurred with the seasonal requirements and the Discharger is proceeding with its compliance project. In addition to effluent limitations for pathogens, this order includes effluent limitations for BOD_5 and TSS, and filter performance specifications for turbidity that are consistent with tertiary treatment.

The Discharger has determined that the existing pure oxygen activated sludge secondary treatment system will be replaced by a BNR secondary wastewater treatment system. Pilot testing of the BNR secondary treatment system indicates that the BNR secondary effluent will have lower pathogen concentrations (cryptosporidium and giardia) than the current pure oxygen activated sludge secondary effluent, which will reduce the pathogens discharged to the Sacramento River relative to the current wastewater discharge, even without addition of effluent filtration.[1] Expansion and enhancement of wastewater storage within the Facility that will occur as part of the treatment plant upgrades will allow the Discharger improved control of the varying flow of wastewater, including during peak wet weather flow events. The Discharger would need to construct an effluent filtration system with a design effluent flow of 330 MGD in order to filter peak wet weather flows that occur during sustained wet weather. The 330 MGD flow takes into consideration the flow equalization that will occur with operation of the wastewater

[1] Technical Memorandum to District Leadership from Ken Abraham, "*Draft Answers to Question Raised by Regional Water Quality Board*", 28 February 2014.

storage facilities.

Construction of a smaller filtration system to treat a discharge flow of 217 MGD will allow the Discharger to fully filter the wastewater during dry weather, which would include the times when dilution is the lowest in the Sacramento River and when potential for public contact with the discharged wastewater is the highest, and additionally during most wet weather periods. The Discharger estimated that filters designed for 217 MGD, operated year-round, would provide tertiary filtration for approximately 97 percent of the annual wastewater flow discharged from the Facility to the Sacramento River.[1] At this filter design, between May and October the Title 22, or equivalent, disinfection requirements would be met. Between November and April, the filters would be operated to the 217 MGD design capacity. Treated wastewater effluent flows to the river or storage basins in excess of the 217 MGD design capacity would not be filtered but would be of improved BNR secondary effluent quality with a reduced pathogen concentration relative to the current wastewater discharge. Unfiltered BNR effluent and filtered wastewater would be disinfected and combined with reclaimed water in excess of demands and dechlorinated prior to discharge to the Sacramento River. This combined discharge would occur at times when wet weather and other conditions minimize public use of the receiving water, and high river dilution is generally available, minimizing any increased risk of public contact with wastewater pathogens. By allowing for construction of a smaller filtration facility, the Discharger estimated savings of over $100 million in capital and operational costs.

Between November and April, when potential exposure is less extensive, strict compliance with the Title 22, or equivalent, disinfection criteria is not required. However, as described in section II.A.2 of this Fact Sheet, the Facility will be operated to provide filtration for effluent discharges up to 217 MGD, resulting in most effluent receiving filtration. DDW was consulted in the development of the seasonally based requirements of this Order and agrees the beneficial uses of the Sacramento River will be protected with seasonal total coliform effluent limitations.

[1] Technical Memorandum to District Leadership from Ken Abraham, "*Additional Tables Calculation Projected Blend Volumes*", 11 March 2014.

(c) **WQBEL's.** In accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms, applicable between May and October, of a most probable number (MPN) of 2.2 per 100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. Between November and April, the effluent limitations for total coliform organisms are 2.2 MPN/100 mL as a monthly median; 23 MPN/100 mL as a weekly median; and 240 MPN/100 mL, as an instantaneous maximum.

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DDW recommended Title 22 disinfection criteria and ensure effective performance of the filters year-round, this Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period; and 10 NTU as an instantaneous maximum, to be met prior to disinfection of effluent from the tertiary filters.

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

Final WQBEL's for BOD_5 and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards

currently prescribed. Therefore, this Order requires final AMEL's and AWEL's for BOD_5 and TSS of 10 mg/L and 15 mg/L, respectively, which are technically based on the capability of a tertiary system.

(d) **Plant Performance and Attainability.** New or modified control measures will be necessary in order to comply with the final effluent limitations for BOD_5, total coliform organisms, and TSS, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Discharger submitted an infeasibility analysis dated August 2010 for compliance with these disinfection requirements. Therefore, a compliance time schedule for compliance with the BOD_5, total coliform organisms, and TSS effluent limitations and a requirement to provide Title 22 (or equivalent) tertiary filtration is carried forward in this Order.

ix. **pH**

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

(b) **RPA Results.** 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.

Based on 2,239 samples collected between January 2017 and February 2020, the maximum pH reported was 7.9 and the minimum was 6.0. Although the minimum effluent pH is lower than the Basin Plan objective, based on modeling using the Discharger's dynamic model, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan objectives in the receiving water.

(c) **WQBEL's.** WQBEL's for pH are not required because there is no reasonable potential. As discussed in section IV.B, above, the technology-based effluent limitations for pH are 6.0 and 9.0, as an instantaneous minimum and maximum, respectively. Effluent limitations for pH of 6.0 as an instantaneous minimum and 8.0 as an instantaneous maximum are included in this Order. The instantaneous maximum effluent limitation is more stringent than the technology-based effluent limitation and is based on Facility performance and considering ammonia toxicity, which varies based on pH. The instantaneous minimum

effluent limitation of 6.0 is based on the technology-based effluent limitation and has also been demonstrated through modeling that the limit ensures compliance with the Basin Plan's minimum objective in the receiving water.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum pH of 7.9 does not exceed the instantaneous maximum effluent limitation and the minimum pH of 6.0 is equal to the instantaneous minimum effluent limitation. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

x. **Settleable Solids**

(a) **WQO.** For inland surface waters, the Basin Plan states that "*water shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses*."

(b) **RPA Results.** The discharge of domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids. Settleable solids were not detected in the effluent based on 1,122 samples collected from January 2017 through February 2020. Currently, the Discharger only provides secondary treatment; therefore, settleable solids in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the narrative toxicity objective or Basin Plan numeric objectives and WLA.

(c) **WQBEL's.** This Order contains an AMEL and AWEL for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order.

(d) **Plant Performance and Attainability.** Based on existing performance, the Facility can immediately comply with the final WQBEL's for settleable solids.

xi. **Temperature**

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

(b) **RPA Results.** Treated domestic wastewater is an elevated temperature waste, which could cause or threaten to cause the

receiving water temperature to exceed temperature objectives established in the Thermal Plan. Therefore, reasonable potential exists for temperature and 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. Temperature is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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, which is an elevated temperature waste. This provides the basis for the discharge to have a reasonable potential to cause or contribute to an excursion above the requirements of the Thermal Plan.

(c) **WQBEL's.** Consistent with the Thermal Plan exceptions described in section III.C.1.c of this Fact Sheet, this Order requires that the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

(d) **Plant Performance and Attainability.** The alternative effluent limitation was retained from Order R5-2016-0020-01 and the Discharger has demonstrated continuous compliance with this effluent limitation. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

4. WQBEL Calculations

a. This Order includes WQBEL's for ammonia, bis(2-ethylhexyl)phthalate, BOD_5, chlorine residual, chlorodibromomethane, chlorpyrifos, copper, cyanide, diazinon, dichlorobromomethane, electrical conductivity, methylmercury, nitrate plus nitrite, pH, settleable solids, temperature, total coliform organisms, and TSS. 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 $C \leq B$

Where:

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

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

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 AWEL/AMEL multiplier, where the AWEL multiplier is based on a 98th percentile occurrence probability and the AMEL multiplier is from Table 2 of the SIP.

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

d. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBEL's are calculated in accordance with section 1.4 of the SIP. The ECA's are converted to equivalent long-term averages (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98th percentile occurrence probability.

e. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBEL's are calculated in accordance with section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBEL's are calculated using similar procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

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

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

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

Where:

$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL

$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL

M_A = statistical multiplier converting acute ECA to LTA_{acute}

M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

f. **Dynamic Model.** Section 1.4.D of the SIP allows the use of a dynamic model to calculate WQBEL's. Chapter 5.4.1 of the TSD (see page 101) provides guidance for deriving WQBEL's using a dynamic model. A three-step process has been used in this Order to derive WQBEL's for cyanide when calculating the chronic long-term average using the Discharger's dynamic model.[1]

i. A point of compliance (edge of mixing zone) is selected. For acute aquatic life criteria, no mixing zone has been allowed. For chronic aquatic life criteria, the edge of the chronic mixing zone is selected.

ii. An LTA is developed for chronic criteria using the dynamic model (i.e., LTAchronic) by iteratively running the dynamic model with successively lower [or higher] LTA's until the model shows compliance with the water quality criteria at the edge of the mixing zone at the appropriate frequency of compliance and averaging period (e.g., chronic criteria are based on a 4-day exposure). The acute LTA was calculated using the steady-state model, because an acute mixing zone has not been allowed in this Order.

iii. The LTA and CV are used to derive MDEL's and AMEL's using the steady-state model procedures described in step 5 of section 1.4.B of the SIP. WQBEL's are calculated using the LTA_{acute} and $LTA_{chronic}$ and the more stringent WQBEL's are applied.

[1] These procedures are discussed in more detail in a Technical Memorandum from Larry Walker Associates to SRCSD titled, "*Calculation of WQBEL via Output from a Dynamic Model – DRAFT*", 23 February 2009

Summary of Water Quality-Based Effluent Limitations
Discharge Point 001

Table F-17. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Average Monthly Effluent Limitations	Average Weekly Effluent Limitations	Maximum Daily Effluent Limitations
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--
Total Suspended Solids	mg/L	10	15	--
Bis(2-ethylhexyl)phthalate	µg/L	8.9	--	20
Chlorodibromomethane	µg/L	22	--	44
Copper, Total	µg/L	7.4	--	12
Cyanide, Total (as CN)	µg/L	11	--	22
Dichlorobromomethane	µg/L	31	--	70
Ammonia Nitrogen, Total (as N)	mg/L (see table note 1. below)	2.1	2.6	--
Ammonia Nitrogen, Total (as N)	mg/L (see table note 2. below)	2.4	3.2	--
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 1. and 3. below)	3,200	3,900	--
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 2. and 3. below)	3,600	4,800	--
Chlorine, Total Residual	mg/L	--	0.011 (see table note 4. below)	0.019 (see table note 5. below)
Chlorpyrifos	µg/L	(see table note 6. below)	(see table note 7. below)	--
Diazinon	µg/L	(see table note 6. below)	(see table note 7. below)	--
Electrical Conductivity @ 25°C	µmhos/cm	1,300 (see table note 8. below)	--	--
Methylmercury	grams/year	89 (see table note 9. below)	--	--
Nitrate Plus Nitrite, Total (as N)	mg/L	16.1	22	--
Nitrate Plus Nitrite, Total (as N)	lbs/day (see table note 3. below)	15,095	--	--
Settleable Solids	mL/L	0.1	0.2	--

Parameter	Units	Average Monthly Effluent Limitations	Average Weekly Effluent Limitations	Maximum Daily Effluent Limitations
Temperature	°F	--	--	(see table note 10. below)

Table F-17 Notes:

1. Effluent limitations applicable from 1 April through 31 October.
2. Effluent limitations applicable from 1 November through 31 March.
3. Based on an average dry weather flow of 181 MGD.
4. Applied as a 4-day average effluent limitation.
5. Applied as a 1-hour average effluent limitation.
6. Average Monthly Effluent Limitation (AMEL):

   $S_{AMEL} = C_{D\ M\text{-}avg}/0.079 + C_{C\ M\text{-}avg}/0.012 \leq 1.0$

   Where:

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

   $C_{C\ M\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L
7. Average Weekly Effluent Limitation (AWEL):

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

   Where:

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

   $C_{C\ W\text{-}avg}$ = average weekly chlorpyrifos effluent concentration in µg/L
8. Applied as an annual average effluent limitation.
9. The effluent calendar year annual methylmercury load shall not exceed 89 grams, in accordance with the Delta Mercury Control Program, effective 31 December 2030.

10. The maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

    a. **pH:**

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

        ii. 8.0 SU as an instantaneous maximum.

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

        i. **May through October:**

            (a) 2.2 MPN/100 mL, as a 7-day median;

            (b) 23 MPN/100 mL, more than once in any 30-day period; and

            (c) 240 MPN/100 mL, at any time.

        ii. **November through April:**

            (a) 2.2 MPN/100 mL, as a monthly median;

            (b) 23 MPN/100 mL, as a weekly median; and

            (c) 240 MPN/100 mL, at any time.

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 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 section 3.1.20) The Basin Plan also states that, "…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…"

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the

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

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "*Guidance for NPDES Permit Issuance*", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc*." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

70 percent, minimum for any one bioassay; and

90 percent, median for any three consecutive bioassays.

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page section 3.1.20) Based on chronic WET data for testing performed by the Discharger from March 2017 through February 2020, the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

i. **RPA.** A dilution ratio of 8:1 is available for chronic WET. Chronic toxicity testing results exceeding 8 chronic toxicity units (TUc) (as

100/NOEC) and a percent effect at 12.5 percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Based on chronic toxicity testing conducted between March 2017 and February 2020, the maximum chronic toxicity result was >16 TUc on 3 July 2019 with a percent effect of 34.94 percent at 12.5 percent effluent. Therefore, the discharge has reasonable potential to cause or contribute to an in-stream exceedance of the Basin Plan's narrative toxicity objective.

ii. **WQBEL's.** The effluent chronic toxicity shall not exceed 8 TUc (as 100/NOEC) AND a percent effect of 25 percent at 12.5 percent effluent, for any endpoint as the median of up to three consecutive chronic toxicity tests within a 6-week period. Per the compliance schedule described in section VI.C.7.d of the Order, these final effluent limits are effective **1 May 2026**. The State Water Board is developing new statewide toxicity provisions through the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California that will be applicable to the Discharger. Upon the effective date of the Water Quality Control Plan, the Central Valley Water Board intends to reopen this Order to incorporate the new toxicity provisions. It is expected the new statewide toxicity provisions will be effective prior to implementation of the final WQBEL's for chronic WET in this Order.

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 and nitrate plus nitrite to ensure mass-loading of these oxygen-demanding nutrients in the far-field does not occur. In addition, mass-based limits for methylmercury have been established in this Order in accordance with the Delta Methylmercury Control Program. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for

pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) in Prohibition 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 impracticable. For bis(2-ethylhexyl)phthalate, chlorodibromomethane, copper, cyanide, and dichlorobromomethane, AWEL's have been replaced with MDEL's in accordance with section 1.4 of the SIP. Furthermore, for chlorine residual, pH, 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 Order R5-2016-0020-01, with the exception of effluent limitations for ammonia, BOD_5, carbon tetrachloride, chlorodibromomethane, dichlorobromomethane, methylene chloride, electrical conductivity, nitrate plus nitrite, and TSS. The effluent limitations for these pollutants are less stringent than those in Order R5-2016-0020-01. 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 303(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLA's 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, within the Sacramento-San Joaquin Delta, is considered an attainment water for ammonia, BOD5, carbon tetrachloride, chlorodibromomethane, dichlorobromomethane, methylene chloride, electrical conductivity, nitrate plus nitrite, and TSS because the receiving water is not listed as impaired on the 303(d) list for these constituents. ("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.) As discussed in section IV.D.4, below, relaxation of the effluent limits complies with federal and state antidegradation requirements. Thus, relaxation of the effluent limitations for ammonia, chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and electrical conductivity, removal of the effluent limitations for carbon tetrachloride and methylene chloride, and removal of the maximum daily and mass-based effluent limits for BOD5 and TSS from Order R5-2016-0020-01 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 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3 of this Fact Sheet, updated information that was not available at the time Order R5-2016-0020-01 was issued indicates that carbon tetrachloride and methylene chloride 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 R5-2016-0020-01 was issued indicates that less stringent effluent limitations for nitrate plus nitrite, chlorodibromomethane and dichlorobromomethane based on available dilution credits satisfy requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. **Carbon Tetrachloride.** Effluent monitoring data collected between January 2017 and February 2020 indicates that carbon tetrachloride in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the applicable CTR criteria.

ii. **Chlorodibromomethane.** Updated background chlorodibromomethane data demonstrates that more assimilative capacity is available within the Sacramento River. Therefore, this Order includes less-stringent effluent limitations for chlorodibromomethane based on the updated background data and assimilative capacity. Although the effluent limitations for chlorodibromomethane are technically less stringent, there is no increase in the percent of available assimilative capacity being used.

iii. **Dichlorobromomethane.** Updated background dichlorobromomethane data demonstrates that more assimilative capacity is available within the Sacramento River. Therefore, this Order includes less-stringent effluent limitations for dichlorobromomethane based on the updated background data and assimilative capacity. Although the effluent limitations for dichlorobromomethane are technically less stringent, there is no increase in the percent of available assimilative capacity being used.

iv. **Methylene Chloride.** Effluent monitoring data collected between January 2017 and February 2020 indicates that methylene chloride in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the applicable CTR criteria.

v. **Nitrate plus Nitrite.** The Discharger submitted a mixing zone study for nitrate plus nitrite demonstrating that assimilative capacity is available in the near-field and dilution is available for compliance with the Primary MCL. This Order allows for a relaxation of the effluent limits for nitrate plus nitrite by allowing dilution credits to calculate the concentration-based effluent limits, while establishing mass-based limits to ensure the mass loading of nutrients does not increase in the far-field.

vi. **Ammonia Nitrogen, Total (as N).** The ammonia effluent limitations have been revised based on updated pH and temperature data used for the calculation of the ammonia water quality criteria.

c. **Flow.** Order R5-2016-0020-01 included flow as an effluent limit based on the Facility design flow. Compliance with the effluent limits for flow in Order R5-2016-0020-01 was calculated annually based on the average daily flow collected over three consecutive dry weather months. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order. Flow as a discharge prohibition adequately regulates the Facility, does not allow for an increase in the discharge of pollutants, and does not constitute backsliding.

4. Antidegradation Policies

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 ammonia, chlorodibromomethane, dichlorobromomethane, and electrical conductivity. 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 and dichlorobromomethane 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. This Order includes less-stringent effluent limitations for chlorodibromomethane and dichlorobromomethane based on the updated background data and assimilative capacity. Although the effluent limitations for chlorodibromomethane and dichlorobromomethane are technically less stringent, there is no increase in the percent of available assimilative capacity being used. According to U.S. EPA's memorandum on Tier 2 Antidegradation Reviews and Significance Thresholds, any individual decision to lower water quality for nonbioaccumulative 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 zones for chlorodibromomethane and dichlorobromomethane will be de minimis. Further, any change to water quality 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 and dichlorobromomethane 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 carbon tetrachloride and methylene chloride 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 carbon tetrachloride and methylene chloride 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 carbon tetrachloride and methylene chloride 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 implements the site-specific acute and chronic criteria for ammonia provided by the January 2020 Criteria Recalculation Report, with the adjustments to the chronic criteria recommended by U.S. EPA. The Central Valley Water Board had previously implemented 1999 U.S. EPA NAWQC for the protection of freshwater aquatic life for total ammonia prior to CVCWA submitting the January 2020 Criteria Recalculation Report. The Central Valley Water Board finds that the site-specific ammonia criteria provided in the January 2020 Criteria Recalculation Report implement the Basin Plan's narrative toxicity objective to protect aquatic life beneficial uses of the receiving water. Therefore, the measures required by this Order result in the implementation of BPTC and any change to water quality 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. Thus, the allowance of the relaxation of effluent limitations for ammonia based on updated criteria is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy.

This Order allows for the relaxation of performance-based effluent limitations for electrical conductivity based on recent Facility performance. Based on a review of effluent data collected over the past three years, the Central Valley Water Board has concluded that the Discharger can no longer comply with the performance-based annual average effluent limitation for electrical conductivity included in Order R5-2016-0020-01. Furthermore, effluent electrical conductivity concentrations are expected to continue to increase over the term of this Order due to increase water conservation efforts within the Discharger's service area. Although electrical conductivity concentrations have been increasing in the Facility's influent and effluent, as described in section IV.C.3 of this Fact Sheet, the receiving water has consistently been in compliance with the applicable water quality standards for salinity. Modifications to the Facility's treatment system to further reduce salinity in the discharge would impart substantial costs to the Discharger and ratepayers without providing any additional protection of beneficial uses. Therefore, the Central Valley Water Board has determined that relaxing the performance-based annual average electrical conductivity effluent limitation in this Order will result in BPTC necessary to assure that a pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the state will be maintained. Thus, the allowance of the relaxation of the performance-based electrical conductivity limit 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). 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. Furthermore, both concentration-based AMEL's and AWEL's remain for BOD_5 and TSS, as well as an average dry weather flow prohibition that limits the amount of flow that can be discharged to the receiving water during dry

weather months. The combination of concentration-based effluent limits and a flow prohibition in this Order are equivalent to mass-based effluent limitations, which were redundant limits contained in previous Orders by multiplying the concentration-based effluent limits and permitted average dry weather flow by a conversion factor to determine the mass-based effluent limitations. 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 removal of maximum daily and mass-based effluent limits for BOD_5 and TSS is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy.

The Discharger submitted a mixing zone study for nitrate plus nitrite demonstrating that assimilative capacity is available in the near-field and dilution is available for compliance with the Primary MCL. This Order allows for a relaxation of the effluent limits for nitrate plus nitrite by allowing dilution credits to calculate the concentration-based effluent limits. However, the mass-based limits have not been allowed to increase and have been continued from the previous Order to ensure the mass loading of nutrients does not increase in the far-field. Therefore, this Order does not allow for an increase in the mass of pollutants discharged for nitrate plus nitrite and 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, pH, and TSS. Restrictions on these constituents are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. For BOD_5, pH, and TSS, 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. 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-18. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations	Basis[1]
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	AMEL 10 AWEL 15	TTC
Biochemical Oxygen Demand (5-day @ 20°C)	Percent Removal	AMEL 85	CFR
pH	Standard Units	Instantaneous Max 8.0 Instantaneous Min 6.0	BP
Total Suspended Solids	mg/L	AMEL 10 AWEL 15	TTC
Total Suspended Solids	Percent Removal	AMEL 85	CFR
Bis(2-ethylhexyl)phthalate	µg/L	AMEL 8.9 MDEL 20	CTR
Chlorodibromomethane	µg/L	AMEL 22 MDEL 44	CTR
Copper, Total	µg/L	AMEL 7.4 MDEL 12	CTR
Cyanide, Total (as CN)	µg/L	AMEL 11 MDEL 22	CTR
Dichlorobromomethane	µg/L	AMEL 31 MDEL 70	CTR
Ammonia Nitrogen, Total (as N)	mg/L (see table note 2. below)	AMEL 2.1 AWEL 2.6	NAWQC
Ammonia Nitrogen, Total (as N)	mg/L (see table note 3. below)	AMEL 2.4 AWEL 3.2	NAWQC
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 2. and 4. below)	AMEL 3,200 AWEL 3,900	NAWQC
Ammonia Nitrogen, Total (as N)	lbs/day (see table notes 3. and 4. below)	AMEL 3,600 AWEL 4,800	NAWQC
Chlorine, Total Residual	mg/L	AWEL 0.011 (see table note 5. below) MDEL 0.019 (see table note 6. below)	NAWQC

Parameter	Units	Effluent Limitations	Basis[1]
Chlorpyrifos	µg/L	(see table notes 7. and 8. below)	TMDL
Diazinon	µg/L	(see table notes 7. and 8. below)	TMDL
Electrical Conductivity @ 25°C	µmhos/cm	AMEL 1,300 (see table note 9.)	PB
Methylmercury	grams/year	AMEL 89 (see table note 10. below)	TMDL
Nitrate Plus Nitrite, Total (as N)	mg/L	AMEL 16.1 AWEL 22	MCL
Nitrate Plus Nitrite, Total (as N)	lbs/day	AMEL 15,095 (see table note 4. below)	MCL
Settleable Solids	mL/L	AMEL 0.1 AWEL 0.2	BP
Temperature	°F	(see table note 11. below)	TP
Total Coliform Organisms	MPN/100 mL (see table note 12. below)	AMEL 2.2 (see table note 13. below) AWEL 23 (see table note 14. below) Instantaneous Max 240	Title 22
Total Coliform Organisms	MPN/100 mL (see table note 15. below)	AMEL 2.2 (see table note 16. below) AWEL 23 (see table note 17. below) Instantaneous Max 240	Title 22
Acute Toxicity	Percent Survival	MDEL 70/90 (see table notes 18. and 19. below)	BP
Chronic Toxicity	TUc	MDEL 8 (see table note 20. below)	BP

Table F-18 Notes:

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.
   PB – Based on Facility performance.
   MCL – Based on the Primary Maximum Contaminant Level.

TP – Based on the Thermal Plan.
Title 22 – Based on State Water Board Division of Drinking Water Reclamation Criteria, Title 22.

2. Effluent limitations applicable from 1 April through 31 October.

3. Effluent limitations applicable from 1 November through 31 March.

4. Based on an average dry weather flow of 181 MGD.

5. Applied as a 4-day average effluent limitation.

6. Applied as a 1-hour average effluent limitation.

7. Average Monthly Effluent Limitation (AMEL):

$$S_{AMEL} = C_{D\ M\text{-}avg}/0.079 + C_{C\ M\text{-}avg}/0.012 \leq 1.0$$

Where:

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

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

8. Average Weekly Effluent Limitation (AWEL):

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

Where:

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

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

9. Applied as an annual average effluent limitation.

10. The effluent calendar year annual methylmercury load shall not exceed 89 grams, in accordance with the Delta Mercury Control Program, effective 31 December 2030.

11. The maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

12. Effluent limitations applicable from 1 May through 31 October.

13. Applied as a 7-day median effluent limitation.

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

15. Effluent limitations applicable from 1 November through 30 April.

16. Applied as a monthly median effluent limitation.

17. Applied as a weekly median effluent limitation.

18. 70 percent minimum of any one bioassay.

19. 90 percent median for any three consecutive bioassays.

20. Effective **1 May 2026**, the effluent chronic toxicity shall not exceed 8 TUc (as 100/NOEC) AND a percent effect of 25 percent at 12.5 percent effluent, for any endpoint as the median of up to three consecutive chronic toxicity tests within a 6-week period.

E. Interim Effluent Limitations

The State Water Board's Resolution 2008-0025 "Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits" (Compliance Schedule Policy) requires the Central Valley Water Board to establish interim numeric effluent limitations in this Order for compliance schedules longer than 1 year. As discussed in section VI.B.7 of this Fact Sheet, the Central Valley Water Board is approving compliance schedules longer than 1 year for BOD_5, methylmercury, total coliform organisms, TSS, and chronic WET. The Compliance Schedule Policy requires that interim effluent limitations be based on current Facility performance or existing permit limitations, whichever is more stringent. The interim effluent limitations for BOD_5, total coliform organisms, and TSS are based on levels recommended by DDW for secondary treatment-level disinfection. Consistent with the Delta Mercury Control Program, this Order includes interim effluent limitations for total mercury based on Facility performance. The interim effluent limitations for chronic WET are also based on Facility performance.

1. Seasonal Title 22 (or Equivalent) Requirements.

a. **Compliance Schedule.** The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the final effluent limitations for BOD5, total coliform organisms, and TSS, as described below. Therefore, compliance schedules for compliance with the final effluent limitations for BOD5, total coliform organisms, and TSS is established in the Order.

i. **Demonstration that the Discharger needs time to implement actions to comply with a more stringent permit limitation specified to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard.** Table 2.2 of the Discharger's August 2010 Infeasibility Report identifies constituents with the potential to exceed effluent limitations in the proposed NPDES Permit based on monitoring data collected between June 2005 and July 2008, including BOD_5, total coliform organisms, and TSS. The Discharger states that the requested compliance schedules are driven primarily by the need to construct treatment plant upgrades.

ii. **Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts.** The Infeasibility Report stated that the Discharger has pretreatment program that regulates industrial discharges and an active source control program. The Discharger issues permits to significant and nonsignificant users, which require monitoring of pollutants of concern and implementation of limits where deemed necessary to control a point source. Table 2-3 of the Infeasibility Report identified 33 categorical industrial users, 27 significant industrial users and 306 non-significant users. Potential sources of BOD_5, TSS and total coliform organisms include domestic and non-domestic sources.

iii. **Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have been established.** The Discharger has active source reduction programs targeting mercury, pesticides (including chlorpyrifos, diazinon and lindane) and waste medications.

iv. **A proposed schedule for additional source control measures or waste treatment.** For BOD_5, TSS, and total coliform organisms, the Discharger proposed pilot testing, design and construction to be achieved 9 years from the permit effective date and full compliance with effluent limitations by 1 December 2019.[1]

v. **Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim permit effluent limit**

[1] The final compliance dates were originally 1 December 2020 but were stayed by certain orders issued by the Sacramento County Superior Court, Honorable Michael Kenny. The stays resulted in change, or shift by a period of time, in the compliance deadlines as well as in the schedule for certain steps toward compliance. The operative orders were issued by the Superior Court on 13 July 2012 and 6 May 2013.

to apply if a schedule of compliance is granted. Interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The Discharger can consistently comply with the effluent limitations for BOD_5, total coliform organisms, and TSS required by Orders 5-00-188, R5-2010-0114-04, and R5-2016-0020-01. Therefore, this Order requires compliance with interim effluent limitations based on the effluent limitations required by Orders 5-00-188, R5-2010-0114-04, and R5-2016-0020-01.

vi. **The highest discharge quality that can reasonably be achieved until final compliance is attained.** Compliance with the interim effluent limitations will ensure that the Discharger maintains the discharge at levels that can reasonably be achieved until final compliance is attained.

vii. **The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs.** The Discharger determined in the Infeasibility Report that the compliance schedule is as short as possible. The estimated durations for each task and estimated completion dates were included in Table 2-4 of the Infeasibility Report. Interim performance-based MDEL's have been retained from Orders R5-2010-0114-04 and R5-2016-0020-01 and are in effect through 9 May 2023 until the final limitations take effect. Previous Order R5-2010-0114-04 required the Discharger to submit a Method of Compliance Workplan/Schedule to assure compliance with the final effluent limitations for BOD_5, TSS, and total coliform organisms. The interim numeric effluent limitations and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

b. **Interim Limits.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than 1 year. Interim effluent limitations must be based on current treatment plant performance or previous final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, average monthly, etc.) for effluent limitations for which compliance protection is intended.

Order R5-2016-0020-01 included interim effluent limitations for BOD5, total coliform organisms, and TSS based on levels recommended by DDW for secondary treatment-level disinfection. This Order retains the interim

effluent limitations for BOD5, total coliform organisms, and TSS from Order R5-2016-0020-01. However, MDEL's for BOD5 and TSS have not been retained from Order R5-2016-0020-01 based on 40 C.F.R. part 122.45 (d), which requires permit limitations for POTW's be stated as AMEL's and AWEL's.

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

2. **Methylmercury.**

a. **Compliance Schedule.** This Order contains a final effluent limitation for methylmercury based on the Basin Plan's Delta Mercury Control Program that became effective on 20 October 2011. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the final effluent limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for methylmercury is established in the Order.

A compliance schedule is necessary because the Discharger must implement actions, including a Phase 1 Methylmercury Control Study and possible upgrades to the Facility, to comply with the final effluent limitations.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream. The Discharger conducted monthly monitoring for mercury and methylmercury during the term of Order R5-2016-0020-01. The Discharger has developed and continues to implement a pollution prevention plan for mercury and provided annual progress reports during the term of Order R5-2016-0020-01.

The compliance schedule is as short as possible. The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. Therefore, at this time, it is uncertain what measures must be taken to

consistently comply with the WLA for methylmercury. The interim effluent limits and final compliance date may be modified at the completion of Phase 1.

Interim performance-based limitations have been included in this Order. The interim limitations were determined as described in section IV.E.2.b, below, and are in effect until the final limitations take effect. The interim numeric effluent limitations and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

b. **Interim Limits.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than 1 year. Interim effluent limitations must be based on current treatment plant performance or previous final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, AWEL, etc.) for effluent limitations for which compliance protection is intended.

The interim effluent limitations for total mercury are based on Facility performance. The Delta Mercury Control Program requires POTW's to limit their discharges of inorganic (total) mercury to Facility performance-based levels during Phase 1. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of the 12-month running effluent inorganic (total) mercury mass loads. At the end of Phase 1, the interim inorganic (total) mercury mass limit will be re-evaluated and modified as appropriate. The Delta Mercury Control Program also requires interim limits established during Phase 1 and allocations will not be reduced as a result of early actions that result in reduced inorganic (total) mercury and/or methylmercury in discharges.

This Order retains the interim performance-based effluent limitation for total mercury from Order R5-2016-0020-01, which is consistent with the intent of the TMDL to not penalize dischargers for early actions to reduce mercury. The interim effluent limitation for total mercury shall apply in lieu of the final effluent limitation for methylmercury.

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality

and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

3. **Chronic Whole Effluent Toxicity (WET)**

a. **Compliance Schedule.** The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the final effluent limitation for chronic WET, as described below. Therefore, a compliance schedule for compliance with the final effluent limitation for chronic WET is established in the Order.

A compliance schedule is necessary because the Discharger must implement actions to comply with the final effluent limitation for chronic WET.

The Discharger has made diligent efforts to quantify chronic WET in the discharge and the sources of chronic WET in the waste stream. The Discharger conducted monthly chronic WET monitoring during the term of Order R5-2016-0020-01.

The compliance schedule is as short as possible. An interim performance-based limitation has been included in this Order and was determined as described in section IV.E.3.b, below. The interim effluent limitation for chronic WET is in effect until the final effluent limitation takes effect on **1 May 2026**. The interim numeric effluent limitation for chronic WET and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

b. **Interim Limits.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for a compliance schedule longer than 1 year. Interim effluent limitations must be based on current treatment plant performance or pervious final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, AWEL, etc.) for effluent limitations for which compliance protection is intended.

The interim effluent limitation for chronic WET is based on Facility performance. Based on monthly chronic WET testing conducted over the term of Order R5-2016-0020-01, the maximum observed result was >16 TUc (as 100/NOEC) and a percent effect of 34.94 percent at 12.5 percent effluent. The Central Valley Water Board has established an

interim effluent limitation for chronic WET of 16 TUc (as 100/NOEC) and a percent effect of 25 percent at 6.25 percent effluent.

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the final effluent limitations can be achieved.

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

Recycling specifications applicable to the Discharger are included in Master Reclamation Permit 97-146.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

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

    a. **Bacteria**. On 7 August 2018 the State Water Board adopted Resolution No. 2018-0038 establishing Bacteria Provisions, which are specifically titled "Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Bacteria Provisions and a Water Quality Standards Variance Policy" and "Amendment to the Water Quality Control Plan for Ocean Waters of California—Bacteria Provisions and a Water Quality Standards Variance Policy." The Bacteria Water Quality Objectives established in the Bacteria Provisions supersede any

numeric water quality objective for bacteria for the REC-1 beneficial use contained in a water quality control plan before the effective date of the Bacteria Provisions.

The Bacteria Water Quality Objectives correspond with the risk protection level of 32 illnesses per 1,000 recreators and use E. coli as the indicator of pathogens in freshwaters and enterococci as the indicator of pathogens in estuarine waters and ocean waters.

The Bacteria Provisions provide that where a permit, waste discharge requirement (WDR), or waiver of WDR includes an effluent limitation or discharge requirement that is derived from a water quality objective or other guidance to control bacteria (for any beneficial use) that is more stringent than an applicable Bacteria Water Quality Objective, the Bacteria Water Quality Objective would not be implemented in the permit, WDR, or waiver of WDR. Until compliance with the final effluent limitations for total coliform, this standard has not been met in this Order. Therefore, the Bacteria Water Quality Objective has been implemented as a receiving water limitation.

The bacteria receiving water limitation in this Order has been established based on the Bacterial Water Quality Objective for inland surface waters, which requires the six-week rolling geometric mean of Escherichia coli (E. coli) shall not exceed 100 colony forming units (cfu) per 100 milliliters (mL), calculated weekly, and a statistical threshold value (STV) of 320 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.

b. Temperature. The Thermal Plan is applicable to the discharge from the Facility. For the purposes of the Thermal Plan, the discharge is considered to be an Existing Discharge of Elevated Temperature Waste to an Estuary, as defined in the Thermal Plan. Consistent with the Discharger's Thermal Plan exception, the Discharger is required to comply with the following:

i. If the natural receiving water temperature is less than 65°F, the discharge shall not create a zone, defined by water temperature of more than 2°F above natural temperature, which exceeds 25 percent of the cross sectional area of the river at any point outside the zone of initial dilution.

ii. If the natural receiving water temperature is 65°F or greater, the discharge shall not create a zone, defined by a water temperature of 1°F or more above natural receiving water temperature which exceeds 25 percent of the cross sectional area of the river at any point outside the zone of initial dilution for more than 1 hour per day as an average in any month.

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

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

This Order contains receiving water limitations for temperature based on the Thermal Plan exceptions.

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 as municipal supply. 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 MUN, agricultural supply, industrial supply or some other beneficial use.

3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state issued NPDES permits. These conditions must be incorporated into

the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** The Delta Mercury Control Program was designed to proceed in two phases. Phase 1 is currently underway. Phase 2 begins after the Phase 1 Delta Mercury Control Program Review and Board approval. As a result of the Phase 1 Delta Mercury Control Program Review, changes may be needed to final allocations, implementation and monitoring requirements, and compliance schedules. Therefore, this Order may be reopened to address changes to the Delta Mercury Control Program.

b. **Pollution Prevention.** The Discharger was previously required to develop pollution prevention plans based on Water Code section 13263.3(d)(3). This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements based on a review of the pollution prevention plans.

c. **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). This Order may be reopened to include a revised acute or chronic toxicity effluent limitation, and/or a limitation for a specific toxicant identified in the TRE.

d. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total. 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.

e. **Electrical Conductivity Effluent Limits and Other Limits Based on Facility Performance.** This Order may be reopened to revise interim and/or final effluent limitations where Facility performance was considered in the development of the limitations (e.g., performance-based effluent limitations for electrical conductivity) should the Discharger provide new information demonstrating the increase in discharge concentrations have

been caused by water conservation efforts, drought conditions, and/or the change in disinfection chemicals.

f. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 17 January 2020, certain Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley became effective. Other provisions subject to U.S. EPA approval became effective on 2 November 2020, when approved by U.S. EPA. As the Central Valley Water Board moves forward to implement those provisions that are now in effect, this Order may be amended or modified to incorporate new or modified requirements necessary for implementation of the Basin Plan Amendments. More information regarding these Amendments can be found on the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) web page: (https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/)

g. **Volatilization Study.** This Order may be reopened to revise the dilution credits and final effluent limitations for disinfection byproducts and other volatile organic compounds that account for the fate and transport of volatile organic compounds in the receiving water should the Discharger provide additional information demonstrating that these constituents attenuate further through volatilization and/or dilution. The evaluation may consider modifications to the allowed mixing zone pursuant to the SIP, section 1.4.2.1, page 17 allowance to consider “monitoring upstream and downstream of the discharge that characterize the extent of actual dilution.”

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 section 3.1.20.) Based on whole effluent chronic toxicity testing performed by the Discharger from March 2017 through February 2020, the discharge does have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective and final WQBELs are required for chronic toxicity, effective 1 May 2026. A compliance schedule allows the Discharger time to come into compliance with the final WQBELs.

In the interim, the MRP of this Order requires chronic WET monitoring. If the discharge exceeds the chronic toxicity monitoring trigger defined in section VI.C.2.a of the Order, this provision requires the Discharger conduct a site-specific TRE.

See the WET Monitoring Flow Chart (Figure F-6), below, for further clarification of the decision points for determining the need for TRE initiation.

Figure F-6: WET Accelerated Monitoring Flow Chart

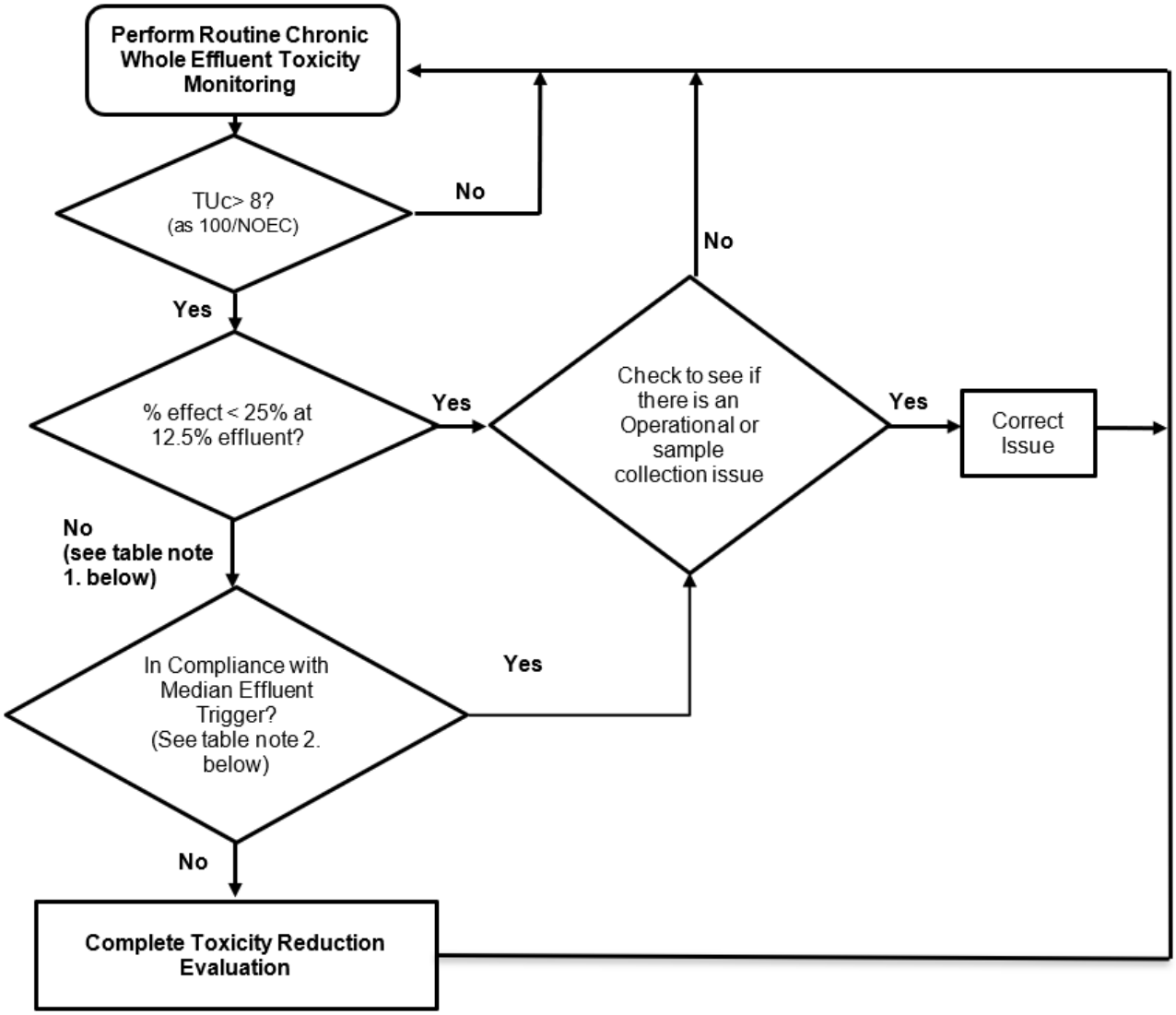


Figure F-6 Notes:

1. 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.

2. See Compliance Determination section VII.Q for procedures for calculating 6-week median.

b. **Filtration Operation Study.** After a sufficient degree of operational experience following commencement of operation of filtration facilities as designed, built and operated, including at least 3 years of circumstances described in the future Facility description in section II.A.2 of the Fact Sheet where some BNR effluent does not receive filtration, a study of November – April performance of the filtration and disinfection system will be required of the Discharger. The study, to be conducted at a time determined by the Central Valley Water Board, will summarize data including the amount (on a daily basis and annual basis) of effluent that did not receive filtration, influent and effluent flows, filter effluent turbidity, filter loading rates, effluent *Giardia* and *Cryptosporidium* data, and effluent *E. coli* and total coliform data.

3. Best Management Practices and Pollution Prevention

a. **Salinity Evaluation and Minimization Plan.** An evaluation and minimization plan for salinity is required to be maintained in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River.

4. Construction, Operation, and Maintenance Specifications

a. **Filtration System Operating Specifications.** Turbidity is included as an operational specification as an indicator of the effectiveness of the filtration system for providing adequate disinfection. The tertiary treatment process is capable of reliably meeting a turbidity limitation of 2 NTU as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.

b. **Emergency Storage Basin Operating Requirements.** The operation and maintenance specifications for the ESB's are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order R5-2016-0020-01. In addition, reporting requirements related to use of the ESB's are required to monitor their use and the potential impact on groundwater.

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

a. **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, which 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 has an approved U.S. EPA pretreatment program that includes 10 non-categorical significant industrial user and 26 categorical significant industrial users.

iii. 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.

b. **Resource Recovery from Anaerobically Digestible Material (ADM).** Some POTW's choose to accept organic material such as food waste, fats, oils, and grease into their anaerobic digesters for co-digestion to increase production of methane and other biogases for energy production and to prevent such materials from being discharged into the collection system, which could cause sanitary sewer overflows. The California Department of Resources Recycling and Recovery has proposed an exemption from requiring Process Facility/Transfer Station permits where this activity is regulated under WDR's or NPDES permits. The proposed exemption is restricted to ADM that has been prescreened, slurried, and processed/conveyed in a closed system to be co-digested with regular POTW sludge. The proposed exemption requires that a POTW develop standard operating procedures for the proper handling, processing, tracking, and management of the ADM before it is received by the POTW.

Standard operating procedures are required for POTW's that accept hauled food waste, fats, oil, and grease for injection into anaerobic digesters. The development and implementation of standard operating procedures for management of these materials is intended to allow the California Department of Resources Recycling and Recovery to exempt this activity from separate and redundant permitting programs. If the POTW does not accept food waste, fats, oil, or grease for resource recovery purposes, it is not required to develop and implement standard operating procedures.

The Discharger currently accepts hauled-in ADM for direct injection into its anaerobic digester for co-digestion. This Order requires the Discharger to implement standard operating procedures. The requirements of the standard operating procedures are discussed in section VI.C.5.b of the Order.

6. Other Special Provisions

a. **Seasonal Title 22, or Equivalent, Disinfection Requirements.** Consistent with Order R5-2016-0020-01, from May to October, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to Title 22, or equivalent, requirements in accordance with the compliance schedule in section VI.C.7.a.

7. Compliance Schedules

In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 C.F.R. section 122.44(d). There are exceptions to this general rule. The Compliance Schedule Policy allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible and may not exceed 10 years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric effluent limitations for that constituent or parameter, interim requirements and dates toward achieving compliance, and compliance reporting within 14 days after each interim date. The Order may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures.

In accordance with the Compliance Schedule Policy and 40 C.F.R. section 122.47, a discharger who seeks a compliance schedule must demonstrate additional time is necessary to implement actions to comply with a more stringent permit limitation. The Discharger must provide the following documentation as part of the application requirements:

a. Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;

b. Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have been established;

c. A proposed schedule for additional source control measures or waste treatment;

d. Data demonstrating current Facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim, permit effluent limit to apply if a schedule of compliance is granted;

e. The highest discharge quality that can reasonably be achieved until final compliance is attained;

f. The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs; and

g. Additional information and analyses to be determined by the Regional Water Board on a case-by-case basis.

Based on information submitted with the ROWD, SMR's, and other miscellaneous submittals, it has been demonstrated to the satisfaction of the Central Valley Water Board that the Discharger needs time to implement actions to comply with the final effluent limitations for BOD_5, methylmercury, total coliform organisms, TSS, and chronic WET.

a. **Seasonal Title 22 (or Equivalent) Requirements.** The Discharger submitted a request, and justification (dated 20 August 2010), for a compliance schedule for BOD5, TSS, and total coliform organisms. This Order retains compliance schedules from Orders R5-2010-0114-04 and Rf-2016-0020 for the final WQBEL's for BOD5, TSS, and total coliform organisms, with compliance required by 9 May 2023. These final compliance dates were originally 1 December 2020 but have been stayed by certain orders issued by the Sacramento County Superior Court, Honorable Michael Kenny. The stays resulted in change, or shift by a period of time, in the compliance deadlines as well as in the schedule for certain steps toward compliance. The operative orders were issued by the Superior Court on 13 July 2012 and 6 May 2013.

b. **Methylmercury.** The Delta Mercury Control Program is composed of two phases. Phase 1 is currently underway and continues through the Phase 1 Delta Mercury Control Program Review. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. Phase 1 includes provisions for implementing pollution minimization programs and interim mass limits for inorganic (total) mercury point sources in the Delta and Yolo Bypass; controlling sediment-bound mercury in the Delta and Yolo Bypass that may become methylated in agricultural lands, wetlands, and open-water habitats; and reducing total mercury loading to the San Francisco Bay, as required by the Water Quality Control Plan for the San Francisco Bay. As part of Phase 1, the CVCWA Coordinated Methylmercury Control Study Work Plan was approved by the Executive Officer on 7 November 2013. The final CVCWA Methylmercury Control Study was submitted to the Central Valley Water Board on 19 October 2018 and revised on 26 October 2018.

As part of Phase 1, the Delta Mercury Control Program also required dischargers to participate in a Mercury Exposure Reduction Program

(MERP). The objective of the MERP is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The Discharger elected to provide financial support in a collective MERP with other Delta dischargers, rather than be individually responsible for any MERP activities. An exposure reduction work plan for Executive Officer approval was submitted on 20 October 2013, which addressed the MERP objective, elements, and the Discharger's coordination with other stakeholders.

At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and WLA's after implementing all reasonable load reduction strategies. The review will also consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, and fish consumption) of attaining the allocations. The fish tissue objectives, linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.

Phase 2 begins after the Phase 1 Delta Mercury Control Program Review. During Phase 2, dischargers shall implement methylmercury control programs and continue inorganic (total) mercury reduction programs. Compliance monitoring and implementation of upstream control programs also shall occur in Phase 2. Any compliance schedule contained in an NPDES permit must be "…*an enforceable sequence of actions or operations leading to compliance with an effluent limitation*…" per the definition of a compliance schedule in CWA section 502(17). See also 40 C.F.R. section 122.2 (definition of schedule of compliance). The compliance schedule for methylmercury meets these requirements.

Federal regulations at 40 C.F.R. section 122.47(a)(1) require that, "*Any schedules of compliance under this section shall require compliance as soon as possible*…" The Compliance Schedule Policy also requires that compliance schedules are as short as possible and may not exceed 10 years, except when "…*a permit limitation that implements or is consistent with the waste load allocations specified in a TMDL that is established through a Basin Plan amendment, provided that the TMDL implementation plan contains a compliance schedule or implementation schedule*." As discussed above, the Basin Plan's Delta Mercury Control Program includes compliance schedule provisions and allows compliance with the WLA's for methylmercury by 2030. Until the Phase 1 Control Studies are complete and the Central Valley Water Board conducts the Phase 1 Delta

Mercury Control Program Review, it is not possible to determine the appropriate compliance date for the Discharger that is as soon as possible. Therefore, this Order establishes a compliance schedule for the final WQBEL's for methylmercury with full compliance required by 31 December 2030, which is consistent with the Final Compliance Date of the TMDL. At completion of the Phase 1 Delta Mercury Control Program Review, the final compliance date for this compliance schedule will be re-evaluated to ensure compliance is required as soon as possible. Considering the available information, the compliance schedule is as short as possible in accordance with federal regulations and the Compliance Schedule Policy.

c. **Chronic Whole Effluent Toxicity (WET).** The Discharger submitted a request and justification, dated 21 December 2020, for a compliance schedule for chronic WET. The compliance schedule justification included all items specified in subsections (a) through (g), above. This Order establishes a compliance schedule for the final WQBEL's for chronic WET, with compliance required by 1 May 2026. The Discharger proposes to achieve final compliance with final WQBEL's for chronic WET by replacing the existing pure oxygen biological treatment facilities with biological nutrient removal air activated treatment facilities capable of removing ammonia and nitrate nitrogen. Tertiary treatment facilities will also be added, including granular media filtration, that will produce a Title 22 equivalent effluent.

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.

Water Code section 13176, subdivision (a)(1) requires that laboratory analyses shall be performed by laboratories accredited by DDW, which accredits laboratories through its Environmental Laboratory Accreditation Program (ELAP). Data generated using field tests are exempt from this requirement pursuant to Water Code section 13176, subdivision (a)(2).

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 the 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 (daily), pH (continuous), TSS (daily), electrical conductivity (weekly), and total dissolved solids (monthly) at Monitoring Location INF-001 have been retained from Order R5-2016-0020-01.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 C.F.R. section 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow (continuous), effluent/river dilution ratio (continuous), BOD_5 (daily), oil and grease (monthly), pH (continuous), TSS (daily), bis(2-ethylhexyl)phthalate (monthly), chlorodibromomethane (monthly), dissolved copper (monthly), total copper (monthly), cyanide (monthly), dichlorobromomethane (monthly), mercury (monthly), alkalinity (monthly), ammonia (daily), chlorine residual (continuous), *Cryptosporidium* (monthly), dissolved oxygen (continuous), electrical conductivity (weekly), *Giardia* (monthly), hardness (monthly), methylmercury (monthly), nitrate plus nitrite (weekly), settleable solids (daily), sulfur dioxide or sodium bisulfite (continuous), temperature (continuous), total coliform organisms (daily), total dissolved solids (weekly), total kjeldahl nitrogen (weekly), and total organic carbon (monthly) have been retained from Order R5-2016-0020-01 to determine compliance with effluent limitations and discharge prohibitions for these parameters.

3. Monitoring data collected over the term of Order R5-2016-0020-01 for carbon tetrachloride and methylene chloride did not demonstrate reasonable potential to cause or contribute to an exceedance of the applicable CTR criteria. Thus, routine monitoring requirements for carbon tetrachloride and methylene chloride have not been retained from Order R5-2016-0020-01.

4. This Order establishes annual effluent monitoring requirements for chlorpyrifos and diazinon in order to determine compliance with the WQBEL's for these parameters based on the TMDL for chlorpyrifos and diazinon for Sacramento-San Joaquin Delta waterways.

5. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month, in accordance with 40 C.F.R. section 133.102. Thus, this Order requires the Discharger to calculate the average percent removal of BOD_5 and TSS on a monthly basis.

6. On 21 December 2018, U.S. EPA finalized updated NAWQC for aluminum in freshwater that reflect the latest science and allow for development of criteria

reflecting the impact of local water chemistry on aluminum toxicity to aquatic life. The updated criteria account for the site-specific bioavailability of aluminum in receiving waters, which is dependent on pH, dissolved organic carbon, and hardness. This Order establishes quarterly effluent monitoring requirements for dissolved organic carbon at Monitoring Location EFF-001 in order to collect sufficient data for calculating aquatic life criteria for aluminum in accordance with the 2018 NAWQC.

7. This Order requires effluent monitoring for BOD_5, TSS, and total coliform organisms at Monitoring Location EFF-001. Upon upgrades to the ESB's, the Discharger proposes to use the basins for multiple uses, including storage and treatment of non-final wastewater (e.g., untreated or partially treated wastewater) and final treated wastewater. The proposed multiple use basins have been designed with a double block and bleed system and monitoring system to ensure water does not unintentionally transfer between basins. Furthermore, a high-pressure cleaning system will be used after the basins store non-final wastewater. This Order requires the Discharger to conduct a study and/or monitoring to demonstrate the ESB cleaning and isolation systems will not allow for wastewater pathogens to be reintroduced to the final effluent following the prior use of the ESB's for non-final (e.g., untreated or partially treated wastewater). This Order also requires the Discharger to develop Emergency Storage Basin Cleaning and Isolation System Study and Standard Operating Procedures in Special Provision VI.C.2.c. Upon Executive Officer approval of the final study results and standard operating procedures, compliance with final effluent limitations for BOD_5, total coliform organisms, and TSS shall be measured at Monitoring Location TER-001. Otherwise, compliance shall be measured at Monitoring Location EFF-001.

8. Timing, duration and purpose of wastewater diversions, effluent or influent, is a measure of proper operation of the wastewater treatment plant and is required to be reported on a monthly basis. In addition, the Discharger shall submit an annual summary of effluent diversions with the annual self-monitoring report (SMR).

9. 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 monthly for 1 year, beginning January 2022, and every other calendar year thereafter. This monitoring frequency has been retained from Order R5-2016-0020-01. See section IX.C of the MRP (Attachment E) for more detailed requirements related to performing priority pollutant monitoring.

10. 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. § 136.3(e), Table II). The Discharger maintains an ELAP certified laboratory on-site and conducts analysis 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 R5-2016-0020-01, weekly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitations for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2016-0020-01, monthly chronic WET testing is required in order to demonstrate compliance with the numeric chronic toxicity effluent limitation.

   The most sensitive species to be used for chronic toxicity testing was determined in accordance with the process outlined in the MRP, section V.E.2. Based on the Discharger's last 3 years of chronic toxicity data, the species that exhibited the highest percent effect was the water flea (*Ceriodaphnia dubia*), with a percent effect of 34.94 percent. Consequently, *Ceriodaphnia dubia* has been established as the most sensitive species for chronic WET testing.

D. Receiving Water Monitoring

1. Surface Water

a. **Delta Regional Monitoring Program.** The Central Valley Water Board requires individual dischargers and discharger groups to conduct monitoring of Delta waters and Delta tributary waters in the vicinity of their discharge, known as ambient (or receiving) water quality monitoring. This monitoring provides information on the impacts of waste discharges on Delta waters, and on the extant condition of the Delta waters. However, the equivalent funds spent on current monitoring efforts could be used more efficiently and productively and provide a better understanding of geographic and temporal distributions of contaminants and physical conditions in the Delta, and of other Delta water quality issues, if those funds were used for a coordinated ambient monitoring effort, rather than continue to be used in individual, uncoordinated ambient water quality monitoring programs. The Delta Regional Monitoring Program will provide

data to better inform management and policy decisions regarding the Delta.

The Discharger is required to participate in the Delta Regional Monitoring Program. Delta Regional Monitoring Program data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Order. Delta Regional Monitoring Program monitoring stations are established generally as "integrator sites" to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta Regional Monitoring Program monitoring stations would not normally be able to identify the source of any specific constituent but would be used to identify water quality issues needing further evaluation. Delta Regional Monitoring Program monitoring data may be used to help establish background receiving water quality for an RPA in an NPDES permit after evaluation of the applicability of the data for that purpose. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point. Delta Regional Monitoring Program data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger's discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to determine the likely source or sources of a constituent that resulted in exceedance of a receiving water quality objective.

Participation in the Delta Regional Monitoring Program by a Discharger shall consist of providing funds and/or in-kind services to the Delta Regional Monitoring Program.

Since the Discharger is participating in the Delta Regional Monitoring Program, this Order does not require receiving water characterization monitoring for purposes of conducting the RPA. However, the ROWD for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant constituents during the term of the permit. Data from the Delta Regional Monitoring Program may be utilized to characterize the receiving water in the permit renewal. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with the ROWD. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point. Historic receiving water monitoring data taken by the Discharger and from

other sources may also be evaluated to determine whether or not that data is representative of current receiving water conditions. If found to be representative of current conditions, then that historic data may be used in characterizing receiving water quality for the purposes of the RPA.

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

c. Receiving water monitoring requirements and sample types for flow (continuous, at Monitoring Location RSWU-001 only), pH (monthly), ammonia (monthly), dissolved oxygen (monthly), electrical conductivity (monthly), hardness (monthly), temperature (monthly), total nitrogen (monthly), and turbidity (monthly) at Monitoring Locations RSWU-001 and RSWD-003 have been retained from Order R5-2016-0020-01 to determine compliance with the applicable receiving water limitations and characterize the receiving water for these parameters. The quarterly fecal coliform organisms monitoring required in Order R5-2016-0020-01 has been replaced with quarterly E. coli organisms monitoring to evaluate compliance with Statewide Bacteria Objectives that are implemented in this Order as receiving water limitations. The bacteria receiving water limitations are expressed in units of colony forming units (CFU) per 100 mL, consistent with the Statewide Bacteria Objectives. The receiving water monitoring allows reporting in either CFU/100 mL or most probable number (MPN)/100 mL, because current ELAP approved analytical methods require reporting in MPN/100 mL for E. coli organisms. Evaluating compliance with the bacteria receiving water limitations using E. coli organisms results expressed in MPN/100 mL is sufficient, because the units CFU/100 mL and MPN/100 mL for E. coli organisms are comparable units of measurement and may be used interchangeably.

d. On 21 December 2018, U.S. EPA finalized updated NAWQC for aluminum in freshwater that reflect the latest science and allow for development of criteria reflecting the impact of local water chemistry on aluminum toxicity to aquatic life. The updated criteria account for the site-specific bioavailability of aluminum in receiving waters, which is dependent on pH, dissolved organic carbon, and hardness. This Order establishes quarterly receiving water monitoring requirements for dissolved organic carbon at Monitoring Locations RSWU-001 and RSWD-003 in order to collect sufficient data for calculating aquatic life criteria for aluminum in accordance with the 2018 NAWQC.

e. 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 the ROWD for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant

constituents during the term of this Order, in order to collect data to conduct an RPA for the next permit renewal.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. Filtration System Monitoring

Effluent monitoring requirements for turbidity at Monitoring Location FIL-001 are retained from Order R5-2016-0020-01 to determine compliance with the operational specifications for turbidity in Special Provision VI.C.4.a of this Order.

2. Land Discharge Monitoring

Land discharge monitoring is required to ensure that wastewater diverted to the ESB's complies with the Land Discharge Specifications in section IV.B of this Order. Monitoring frequencies and sample types at Monitoring Locations ESB-A through ESB-E have been retained from Order R5-2016-0020-01.

3. Pyrethroid Pesticides Monitoring

A Basin Plan Amendment and TMDL for the Control of Pyrethroid Pesticide Discharges in the Sacramento and San Joaquin River basins (Resolution R5-2017-0057) was approved by the Central Valley Water Board on 8 June 2017 and is now effective. The Pyrethroids Control Program established by Resolution R5-2017-0057 requires monitoring by domestic and municipal wastewater dischargers discharging at least 1 MGD for the concentrations of pyrethroid pesticides, total and dissolved organic carbon in the water column, and water column toxicity testing. Monitoring is required to evaluate the potential impacts of discharges of pyrethroid pesticides to receiving waters.

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

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

laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES Program. The Discharger shall submit annually the results of the DMR-QA Study or the results of the most recent Water Pollution Performance Evaluation Study to the State Water Board. The State Water Board's Quality Assurance Program Officer will send the DMR-QA Study results or the results of the most recent Water Pollution Performance Evaluation Study to U.S. EPA's DMR-QA Coordinator and Quality Assurance Manager.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Sacramento Regional County Sanitation District, Sacramento Regional 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 the posting of the Notice of Public Hearing concerning the WDRs at the City of Citrus Heights City Hall on 5 February 2021, the City of Elk Grove City Hall on 16 February 2021, the City of Rancho Cordova City Hall on 16 February 2021, the City of Sacramento City Hall on 16 February 2021, the City of Folsom City Hall on 3 February 2021, the City of West Sacramento City Hall on 5 February 2021, the Parkway Post Office on 4 February 2021, the Sacramento Area Sewer District – Goethe on 3 February 2021, the Sacramento Regional County Sanitation District – Laguna Station on 4 February 2021, and published in the Sacramento Bee on 4 February 2021. The Tentative Order and the Notice of Public Hearing was also posted on the Central Valley Water Board's website.

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

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 **5 March 2021**.

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: **22/23 April 2021**
Time: **8:30 a.m.**
Location: **Online**

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

Instructions on how to file a petition for review (http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml) are available on the Internet.

E. Information and Copying

The ROWD, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Tyson Pelkofer at (916) 464-4853 or Tyson.Pelkofer@waterboards.ca.gov.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Ammonia (as N)	mg/L	43	0.12	1.32	14.96 (see table note 1. below)	2.14 (see table note 2. below)	--	--	--	--	Yes
Bis(2-ethylhexyl)phthalate	µg/L	2.9 (j-flag)	ND	1.8	--	--	1.8	5.9	--	4.0	Insufficient Data (see table note 3 below)
Carbon Tetrachloride	µg/L	ND	ND	0.25	--	--	0.25	4.4	--	0.50	No
Chloride	mg/L	130	6.0	230	860 (see table note 1. below)	230 (see table note 4. below)	--	--	--	250	No
Chlorodibromomethane	µg/L	0.3	ND	0.41	--	--	0.41	34	--	80 (see table note 5. below)	Yes (see table note 3. below)
Copper, Total	µg/L	10	9.3	8.4	12	8.4	1,300	--	10.4	1,000	Yes
Cyanide, Total (as CN)	µg/L	7.5	ND	5.2	22	5.2	700	220,000	10	150	Yes
Dichlorobromomethane	µg/L	1.7	ND	0.56	--	--	0.56	46	--	80 (see table note 5. below)	Yes

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Electrical Conductivity @ 25°C	umhos /cm	1,300	388 (see table note 6. below)	450 (see table note 7. below)	--	--	--	--	450 (see table note 8. below)	900	No (see table note 3. below)
Methylene Chloride	µg/L	1.0	ND	4.7	--	--	4.7	1,500	--	5.0	No
Mercury, Total	µg/L	0.0033 (see table note 9. below)	0.0095	0.012	--	--	--	--	--	0.012 (see table note 10. below)	No (see table note 11. below)
Methylmercury	µg/L	0.00047	0.00018	--	--	--	--	--	--	--	No (see table note 11. below)
Nitrate Plus Nitrite (as N)	mg/L	4.8	0.44	10	--	--	--	--	--	10	Yes (see table note 3. below)
Sulfate	mg/L	100 (see table note 9. below)	14	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	529 (see table note 9. below)	120	500	--	--	--	--	--	500	No (see table note 3. below)

Table Notes:

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

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

(3) See section IV.C.3 of the Fact Sheet for a discussion of the RPA results.

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

(5) Represents the Primary MCL for total trihalomethanes, which includes bromoform, chlorodibromomethane, chloroform, and dichlorobromomethane.

(6) Represents the 14-day running average of the mean daily electrical conductivity in the Sacramento River on the day with the minimum assimilative capacity.

(7) Criteria to be compared to the maximum upstream receiving water concentration.

(8) The Basin Plan contains site-specific water quality objectives for electrical conductivity in the Sacramento River at Emmaton based on the Bay-Delta Plan, which are dependent on water year type.

(9) Represents the maximum observed annual average concentration for comparison with the Secondary MCL or Sport Fish Water Quality Objective for mercury, where applicable.

(10) State Water Board Sport Fish Water Quality Objective for mercury.

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

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

Abbreviations used in this table:

MEC =	Maximum Effluent Concentration
B =	Maximum Receiving Water Concentration or lowest detection level, if non-detect
C =	Criterion used for Reasonable Potential Analysis
CMC =	Criterion Maximum Concentration (CTR or NTR)
CCC =	Criterion Continuous Concentration (CTR or NTR)
Water & Org =	Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org Only =	Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan =	Numeric Site-Specific Basin Plan Water Quality Objective
MCL =	Drinking Water Standards Maximum Contaminant Level
NA =	Not Available
ND =	Non-detect

ATTACHMENT H – CALCULATION OF WQBEL'S

HUMAN HEALTH WQBEL'S CALCULATIONS

Parameter	Units	Criteria	Mean Background Concentration	Effluent CV (see table note 1 below)	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Bis(2-ethylhexyl)phthalate	µg/L	1.8	0.50	0.32	55	2.2	1.7	8.9 (see table note 2 below)	20 (see table note 2 below)	--
Chlorodibromomethane	µg/L	0.41	0.020	0.60	55	2.01	1.55	22	44	--
Dichlorobromomethane	µg/L	0.56	0.010	0.79	55	2.28	1.74	31	70	--
Nitrate Plus Nitrite, Total (as N)	mg/L	10	0.44 (see table note 3 below)	0.98	--	2.50 (see table note 4 below)	1.36	16.1 (see table note 5 below)	--	22

Table Notes:

1. Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.
2. Final effluent limitations in the Order have been retained from Order R5-2016-0020-01.
3. Maximum background concentration.
4. Representative of AWEL/AMEL multiplier.
5. The average monthly mass limitation provides control of the nitrate plus nitrite mass at the water quality objective (10 mg/L), to ensure mass loading of nutrients in the far-field does not occur.

Abbreviations used in the table above:

CV = Coefficient of Variation

AQUATIC LIFE WQBEL'S CALCULATIONS

Parameter	**Units**	**CMC**	**CCC**	**B**	**Eff CV (see table note 1 below)**	**CMC DF**	**CCC DF**	**ECA Mult$_{acute}$**	**LTA$_{acute}$**	**ECA Mult$_{chronic}$**	**LTA chronic**	**AMEL Mult$_{95}$**	**AWEL Mult**	**MDEL Mult$_{99}$**	**AMEL (see table note 2 below)**	**AWEL (see table note 3 below)**	**MDEL (see table note 4 below)**
Ammonia Nitrogen, Total (as N) (see table note 5 below)	mg/L	15.31	2.14	0.12	0.12	--	--	0.77	11.75	0.95	2.04	1.04	1.26	--	2.1	2.6	--
Ammonia Nitrogen, Total (as N) (see table note 6 below)	mg/L	24.03	2.43	<0.093	0.19	--	--	0.66	15.94	0.92	2.25	1.06	1.43	--	2.4	3.2	--
Copper, Total	µg/L	12	8.4 (see table note 7 below)	5.1	0.36	--	2.45 (see table note 8 below)	0.47	5.62	0.67	16.5	1.32	--	2.13	7.4	--	12
Cyanide, Total (as CN)	µg/L	22	5.2	<0.86	0.60	--	(see table note 9 below)	0.32	7.10	(see table note 10 below)	17.2 (see table note 10 below)	1.55	--	3.10	11	--	22

Table Notes:

1. Coefficient of Variation (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. Effluent limitations applicable from 1 April through 31 October.
6. Effluent limitations applicable from 1 November through 31 March.
7. Maximum upstream receiving water dissolved copper concentration based on historical monitoring data collected by the Discharger since 2005.
8. Based on 95th percentile dilution factor estimated at edge of 60-foot chronic aquatic life mixing zone.
9. Variable, based on dynamic modeling results.
10. $LTA_{chronic}$ based on dynamic modeling results for a 60-foot chronic aquatic life mixing zone.

Abbreviations used in the table above:

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

ATTACHMENT I – THERMAL PLAN EXCEPTIONS

I. INTRODUCTION

The Sacramento Regional County Sanitation District (Discharger) has requested exceptions to temperature objectives contained in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan) for the Sacramento Regional Wastewater Treatment Plant (SRWTP) discharge to the Sacramento River within the Sacramento-San Joaquin Delta (Delta). The Thermal Plan allows regional boards to provide exceptions in accordance with Clean Water Act (CWA) section 316(a) and federal regulations. The exceptions shown in Table I-1, below, have been allowed in this Order in accordance with 40 C.F.R. Section 125.73(a), which provides that, "*Thermal discharge effluent limitations or standards established in permits may be less stringent than those required by applicable standards and limitations if the discharger demonstrates to the satisfaction of the director that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. This demonstration must show that the alternative effluent limitation desired by the discharger, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made.*" To meet the Thermal Plan objectives without exceptions, the Discharger would need to construct chillers with an estimated construction cost of$638 million and annual operating costs of $22 million.[26]

Table I-1. Thermal Plan Exceptions

Thermal Plan Requirements (CWA Section 5.A.(1)a-c)	NPDES Permit Requirements
5.A.(1)a The maximum effluent temperature shall not exceed the natural receiving water temperature by more than **20**^{o}F	**Effluent Limitation:** **Exception from 1 October through 30 April** The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than: • **25**^{o} F from 1 October through 30 April; or • **20**^{o} F from 1 May through 30 September
5.A.(1)b Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone,	**Receiving Water Limitation:** **Exception when the natural receiving water temperature is less than 65^{o} F**

[26] Memorandum submitted by the Discharger on 11 December 2015, "Project Cost and Schedule for Compliance with Thermal Plan without Seasonal Exception".

defined by water temperatures of more than **1ºF** above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.	• <u>If the natural receiving water temperature is less than 65º F</u>: The discharge shall not create a zone, defined by water temperature of more than **2º F** above the natural receiving water temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution. • <u>If the natural receiving water temperature is 65º F or greater</u>: The discharge shall not create a zone, defined by water temperature of more than **1º F** above the natural receiving water temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution
5.A.(1)c No discharge shall cause a surface water temperature rise greater than 4ºF above the natural temperature of the receiving waters at any time or place.	***No Exception***

Based on all evidence in the record the Central Valley Water Board finds that the Discharger has adequately demonstrated through thermal effect studies that the effluent and receiving water limitations based on the Thermal Plan are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. The Central Valley Water Board also finds that the alternative limitations, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the Sacramento River and Delta. The findings and conclusions relating to Code of Federal Regulations, title 40, section 125.73(a) are based on studies that analyzed the entire thermal effect of the discharge. Findings supporting the Central Valley Water Board's decision, and evidence supporting the findings, are discussed below.

A. Thermal Effects Studies

The Discharger has conducted several temperature studies to assess the thermal impacts of the discharge on aquatic life of the lower Sacramento River, including:

- **2010 Study**: Thermal Plan Exception Justification for the Sacramento Regional Wastewater Treatment Plant, prepared by Robertson-Bryan, Inc., July 2010

- **2013 Study**: Temperature Study to Assess the Thermal Impacts of the Sacramento Regional Wastewater Treatment Plan Discharge on Aquatic Life of the Lower Sacramento River, prepared by Robertson-Bryan, Inc., March 2013

- **2015 Delta Smelt Addendum**: Temperature Study to Assess the Thermal Impacts of the Sacramento Regional Wastewater Treatment Plan Discharge on Aquatic Life of the Lower Sacramento River: Delta Smelt Addendum, prepared by Robertson-Bryan, Inc., March 2015

- **2015 Supplemental Report**: Regional San Temperature Study: Synthesis, Supplemental Analysis and Findings Report, prepared by Robertson-Bryan, Inc., December 2015

- **2019 Report**: Regional San Thermal Plan Exception Justification Report, prepared by Robertson-Bryan, Inc., December 2019

The 2013 Study considered six questions developed as part of a working group that included Central Valley Water Board staff and fishery agency representatives. The rationale of the working group was that if the answers to all six questions was “no,” then the exceptions, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made. The six questions are summarized below.

- Question 1. Would special-status fishes migrating past the diffuser, or benthic macroinvertebrates or plankton drifting past the diffuser, experience thermal exposures that would exceed lethal or sub-lethal thresholds?

- Question 2. Does the discharge block or delay migration of fishes?

- Question 3. Are large numbers of predatory fishes holding at the diffuser site due to elevated water temperatures?

- Question 4. Do fishes (migratory or resident) congregate and hold within the plume area for extended periods of time, thereby resulting in sufficient exposure duration to cause acute or chronic toxicity, based on plume water quality?

- Question 5. Are predatory fishes that hold at the diffuser site consuming listed fishes?

- Question 6. Do discharges from the SRWTP increase river temperatures, upon full mixing, by magnitude and duration that would be of concern for aquatic life?

The 2013 Study concluded through a number of comprehensive scientific tests that the answer to the above questions was “no.” The tests included fish tagging and tracking, acoustic monitoring, predatory fish sampling and other techniques to assess whether the thermal discharge is causing any impacts to aquatic resources (including cumulative). This conclusion supports continuation of the Thermal Plan exceptions.

Upon reviewing the 2013 Study’s conclusions, USFWS requested more information to append the 2013 Study regarding a single ESA-listed species (Delta Smelt). The Discharger responded to this request with the 2015 Delta Smelt addendum. The 2015 Delta Smelt addendum assessed the potential direct and indirect effects of the thermal discharge on all delta smelt life stages such as adults, larvae, and post-spawn adults, and on delta smelt critical habitat. The study concluded that the discharge “…would not cause lethality to individual delta smelt, result in chronic, adverse sublethal effects, adversely modify delta smelt critical habitat, prevent sustainability or recovery of the delta smelt population, or eliminate access to critical habitat primary constituent elements.” The 2015 Delta Smelt addendum was developed to answer specific questions regarding Delta Smelt.

The 2019 Report updated the characterization of key conditions at the time of the 2016 permit renewal, including Sacramento River flows and temperatures, SRWTP effluent flows and temperatures, SRWTP diffuser configuration, and other relevant conditions that occurred at the time of the thermal studies. The 2019 Report then evaluated whether key conditions inherent to the previous thermal studies changed sufficiently, or new information has become available, since the adoption of the 2016 permit to determine whether the key findings and evidence from the 2016 permit remain valid. The 2019 Report found that key conditions did not change sufficiently and that the requested exception to the Thermal Plan still assures the protection and propagation of balanced indigenous communities of shellfish, fish, and wildlife in the vicinity of the discharge. A summary of the key conclusions is provided below.

B. Thermal Plan Exceptions in Order No. R5-2016-0020

The Thermal Plan allows regional boards to provide exceptions to specific water quality objectives in the Thermal Plan so long as the exceptions comply with CWA section 316(a) and 40 CFR Section 125.73(a). The Central Valley Water Board, after consideration of the Discharger’s temperature studies conducted in 2010, 2013, and 2015, and coordination with the fishery agencies, granted the following exceptions to the Thermal Plan in the 2016 permit, conditional on concurrence of the State Water Board:

1. Thermal Plan Objective 5.A.(1)a Exception:

The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than: 25º F from 1 October through 30 April;

No exception to Thermal Plan Objective 5.A.(1)a was proposed from 1 May through 30 September.

2. Thermal Plan Objective 5.A.(1)b Exception:

If the natural receiving water temperature is less than 65ºF, the discharge shall not create a zone, defined by water temperature of more than 2ºF above natural temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution.

If the natural receiving water temperature was 65ºF or greater, no exception to Thermal Plan Objective 5.A.(1)b is proposed.

On 14 January 2016, Central Valley Water Board staff provided technical justification for the Thermal Plan exceptions to the State Water Board for their review. On 11 March 2016, State Water Board staff agreed there was adequate support for the exceptions. On 21 July 2016, the State Water Board adopted Resolution No. 2016-0036, in which it concurred with the Central Valley Water Board's action granting the SRWTP an exception to the Thermal Plan and adopting alternative less stringent thermal effluent and receiving water limitation in Order R5-2016-0020. State Water Board Resolution No. 2016-0036 also states that the Central Valley Water Board shall review the limitations "at the time of any renewal of SRWTP's discharge permit to determine whether they assure protection and propagation of balanced indigenous communities of aquatic life in the vicinity of the discharge as required by CWA 316(a) and 40 CFR 125.73."

C. California Sportfishing Protection Alliance (CSPA) Litigation

Following the 2010 permit renewal, CSPA filed a petition with the State Water Board. The State Water Board reviewed the permit and issued Water Quality Order WQ-2012-0013 in December 2012 that for the most part upheld the permit with minimal revisions required. The State Water Board Order did not address or require changes to thermal limitations. CSPA subsequently filed a lawsuit with the Sacramento County Superior Court (Court). One of the issues raised by CSPA was related to the allowance of Thermal Plan exceptions in the 2010 Permit.

In October 2014, the Court ruled that the 2010 Permit failed to include the proper findings for a Thermal Plan exception and ordered the Central Valley Water Board to vacate the Thermal Plan exceptions and reconsider the issue of whether Thermal Plan exceptions may be granted.

The Central Valley Water Board reconsidered the issuance of the Thermal Plan exceptions as part of the 2016 permit renewal process. On 24 June 2016, acting on CSPA's objections to the Central Valley Water Board's return to writ of mandate, the Court found that the analyses in the 2015 Supplemental Report, in addition to the 2013 Study and 2015 Delta Smelt Addendum, "support the conclusion that the effluent and receiving water limitations under the exceptions meet the criteria in 40 CFR Section 125.73(a)."

II. CHARACTERIZATION OF THE THERMAL PLUME AND SCIENCE-BASED FINDINGS BASED ON THE 2019 REPORT

In the 2020 ROWD, the Discharger requested that Central Valley Water Board grant the same exceptions to the Thermal Plan as adopted in the 2016 permit and alternative effluent and receiving water limitations, and submitted the 2019 Report in support of its request. The 2019 Report evaluates whether key conditions inherent to the previous thermal studies changed sufficiently, or new information has become available, since the adoption of the 2016 permit to determine whether the key findings and evidence supporting the Thermal Plan exception and alternative limitations in the 2016 permit remain valid. A summary of the key conclusions in the 2019 Report is provided below.

A. 2019 Report.

The 2019 Report evaluated the key conditions based on current information. The key conditions considered in the 2019 Report and updated with current information include:

1. Facility:
    a. Diffuser configuration;
    b. Effluent flows; and
    c. Effluent temperatures.
2. Lower Sacramento River.
    a. Flows;
    b. Temperatures,
    c. Channel bathymetry near the diffuser, and
    d. Effluent plume size and thermal gradients remain unchanged
3. Aquatic and Wildlife Communities.
    a. Lower Sacramento River Aquatic and Wildlife Communities remain unchanged
4. Scientific Literature.
    a. Thermal tolerances reported for representative important species remain unchanged.

B. Key Conditions.

Most key conditions have not changed since the analysis in the 2013 Study and 2015 Delta Smelt Addendum, and the adoption of the 2016 permit.

The following conditions remain unchanged since the analysis in the 2013 Study and 2015 Delta Smelt Addendum, and the adoption of the 2016 permit:

1. The SRWTP diffuser;

2. The range of effluent flows and effluent temperatures, and the highest summer effluent temperatures, discharged from the SRWTP;

3. The worst-case river-to-effluent flow ratio of 14:1;

4. Lower Sacramento River flows and channel bathymetry near the diffuser;

5. Effluent plume size, and accordingly, the zones of passage along the river margins and top half of the water column; and

6. The lower Sacramento River's aquatic and wildlife communities

The scientific literature defining the thermal tolerances of the representative important species was reviewed to determine whether any new publications provide new information that would change the science regarding species-specific thermal tolerances used in making the prior demonstration. Although new scientific publications were identified and reviewed for some species in the 2019 Report, the recently published thermal tolerance data was consistent with, and thus supported, the species-specific, literature derived thermal tolerances that were used for the 2013 Study and 2015 Delta Smelt Addendum. Consequently, these same thermal tolerances were used for the analyses in the 2019 Report.

C. Updated River and Effluent Temperature Data

Updated river and effluent temperature data shows higher monthly maximum river and effluent temperatures occurred during the 2012-2015 drought. The period of record for data compiled for the 2013 Study and 2015 Delta Smelt Addendum included river temperature data from 1992 to 2012, and effluent temperature data from 1985 to 2012. For the 2019 Report, the period of record was updated to include data through 31 March 2019, for both river and effluent temperatures. Examination of the updated data set showed that higher monthly maximum river and effluent temperatures occurred for some months during the recent 2012-2015 drought. Thus, the thermal gradients that would exist within the thermal plume during some months and under some scenarios from the diffuser ports to about 1,000 feet downstream of the diffuser would change somewhat due to the higher river background and effluent temperatures, identified from updating the temperature data sets, compared to those used for the prior demonstration. The 2019 Report thus analyzed the new worst-case thermal exposure scenarios for the most thermally sensitive species that could

potentially be in the vicinity of the discharged: Chinook salmon, steelhead, and Delta Smelt.

D. Analyses of Worst-case Thermal Conditions

Analyses of the effects of worst-case thermal conditions in the river downstream of the diffuser on Chinook Salmon, steelhead, and Delta Smelt (in consideration of the updated period of record) did not change the scientific findings reached in prior studies and adopted in the 2016 permit. Despite the somewhat higher maximum river temperatures that occurred in some months of recent drought years, under these river temperature conditions the SRWTP's thermal discharge would not result in river thermal conditions that would cause lethality or any chronic adverse sublethal effects to Chinook Salmon, steelhead, or Delta Smelt. Because these species are the most thermally intolerant of the representative important species assessed, and because the worst-case thermal conditions within the river downstream of the discharge were analyzed, it can be concluded that the recently observed river temperature conditions would not result in any lethality or chronic adverse sublethal effects to these same species under more favorable thermal conditions. Moreover, it can be further concluded that the higher river temperature conditions reviewed from the recent drought period would not result in any lethality or chronic adverse sublethal effects to any of the more thermally tolerant aquatic or wildlife species using the lower Sacramento River/Delta during any month of the year under any discharge scenario.

It should also be noted that during the summer months when the river experiences its highest background temperatures, the SRWTP does not operate to an exception to Thermal Plan objective 5A(1)(a) (i.e., an effluent-river temperature differential of 25ºF vs. 20ºF). The exception to this objective is only applicable from 1 October through 30 April. River background temperatures during the period 1 October through 30 April when the exception to objective 5A(1)(a) is applicable are typically in the 60s or lower. At such river temperatures, the tenths of a degree Fahrenheit incremental increase caused by the SRWTP's thermal discharge has no adverse effects on the river's aquatic life or wildlife.

E. 2019 Report Findings:

The 2019 Report supports the following findings:

1. The SRWTP thermal discharge will not cause lethality or chronic, adverse sublethal effects (e.g., reduction in reproduction or growth) for any of the representative important aquatic or wildlife species passing through the thermal plume immediately downstream of the SRWTP diffuser or using far-field, fully mixed areas, including ESA-listed fish species;

2. The SRWTP thermal discharge will not cause blockage or significant delay of migratory or resident fishes passing the SRWTP diffuser, including ESA-listed fish species;

3. The SRWTP thermal discharge will not result in exclusion of aquatic life or

wildlife from using large areas of the lower Sacramento River/Delta;

4. The SRWTP thermal discharge will not reduce any aquatic or wildlife species abundance or aquatic community biomass, composition, diversity, structure, or function;

5. The SRWTP thermal discharge will not increase abundance of nuisance species; and

6. The SRWTP thermal discharge will not adversely affect one or more physical and biological features (PBFs) of designated critical habitat for any ESA-listed fish species by sufficient magnitude, frequency, and geographic extent that would result in adverse modification of designated critical habitat.

The Central Valley Water Board finds that the conclusions from the 2016 permit are still valid and support granting the Thermal Plan exception and alternative, less stringent effluent and receiving water limitations.

III. STATE WATER BOARD CONCURRENCE WITH THERMAL PLAN EXCEPTIONS

On 21 July 2016, the State Water Board adopted Resolution No. 2016-0036, in which it concurred with the Central Valley Water Board's action granting the SRWTP an exception to the Thermal Plan and adopting alternative less stringent thermal effluent and receiving water limitation in Order R5-2016-0020. State Water Board Resolution No. 2016-0036 states that the Central Valley Water Board shall review the limitations "at the time of any renewal of SRWTP's discharge permit to determine whether they assure protection and propagation of balanced indigenous communities of aquatic life in the vicinity of the discharge as required by CWA 316(a) and 40 CFR 125.73."

The exceptions and alternative limitations in this permit are the same as those granted in Order R5-2016-2020. State Water Board Resolution No. 2016-0036, concurring in those exceptions and alternative limitations, does not expire, and specifically instructed the Central Valley Water Board to review the exceptions and alternative limitations at renewal to determine whether the requirements of CWA 316(a) and 40 CFR 125.73 are still met. The Central Valley Water Board performed that review in this order and determines that conditions have not changed significantly since the adoption of the 2016 permit and the regulatory standard in CWA 316(a) and 40 CFR 125.73 continues to be met. Accordingly, the exception to the Thermal Plan and alternative, less stringent effluent and receiving water limitations shall become effective on the effective date of this order.