CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2014-0073-01
NPDES No. CA0078590

WASTE DISCHARGE REQUIREMENTS FOR THE TOWN OF DISCOVERY BAY COMMUNITY SERVICES DISTRICT DISCOVERY BAY WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY

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

Table 1. Discharger Information

Discharger	Town of Discovery Bay Community Services District
Name of Facility	Discovery Bay Wastewater Treatment Plant
Facility Address	2500 Channel Road (Plant 1) and 17501 Highway 4 (Plant 2)
	Discovery Bay, CA 94505
	Contra Costa County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Treated Municipal Wastewater	37° 53' 08"	121° 34' 30"	Old River

Table 3. Administrative Information

This Order was adopted on:	**6 June 2014**
This Order shall become effective on:	**1 August 2014**
This Order shall expire on:	**31 July 2019**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**1 February 2019**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	Major

I, **PAMELA CREEDON**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **6 June 2014**, and amended by Order R5-2014-0122 on **9 October 2014**.

ORIGINAL SIGNED BY

PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

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

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

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

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

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

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

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

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

THEREFORE, IT IS HEREBY ORDERED that Order R5-2008-0179-01 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 past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater from the Facility, as the Facility is specifically described in section II.B of the Fact Sheet (Attachment F), in a manner different from that described in this Order is prohibited.

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

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

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

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 (except for total coliform organisms, which shall be measured at Monitoring Locations UVS-001 and UVS-002) as described in the Monitoring and Reporting Program, Attachment E:

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

Table 4. Effluent Limitations – Discharge Point 001

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--
	lbs/day[1]	180	260	350	--	--
	lbs/day[2]	200	290	390	--	--
pH	standard units	--	--	--	6.5	8.5

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Suspended Solids[3]	mg/L	10	15	20	--	--
	lbs/day[2]	200	290	390		
Priority Pollutants						
Copper, Total Recoverable	µg/L	45	--	63	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)[4]	mg/L	0.7	--	2.1	--	--
	lbs/day[2]	14	--	41	--	--
Nitrate Plus Nitrite (as N)[4]	mg/L	10	--	--	--	--

1 Based on a design average dry weather flow of 2.1 MGD. Effective immediately and until Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).
2 Based on a design average dry weather flow of 2.35 MGD. Effective upon Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).
3 Final effluent limitations for total suspended solids are effective **31 December 2017**.
4 Final effluent limitations for ammonia nitrogen, total (as N) and nitrate plus nitrite (as N) are effective **31 December 2023**.

b. **Percent Removal:** The average monthly percent removal of BOD_5 and TSS shall not be less than 85 percent.

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

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

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

e. **Total Coliform Organisms. Effective 31 December 2022**, effluent total coliform organisms at Monitoring Locations UVS-001 and UVS-002 shall not exceed:

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

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

   i. **Average Monthly Effluent Limitation**

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

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

   ii. **Maximum Daily Effluent Limitation**

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

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

g. **Average Dry Weather Flow.** The average dry weather discharge flow shall not exceed:

i. 2.1 MGD, effective immediately and until Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).

ii. 2.35 MGD, effective upon Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).

h. **Electrical Conductivity @ 25°C.** The effluent calendar annual average electrical conductivity shall not exceed 2,100 µmhos/cm.

i. **Methylmercury.** Effective 31 December 2030, the effluent calendar annual methylmercury load shall not exceed 0.37 grams, in accordance with the Delta Mercury Control Program.

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 (except for total coliform organisms, which shall be measured at Monitoring Locations UVS-001 and UVS-002) as described in the Monitoring and Reporting Program, Attachment E:

a. **Effective immediately and ending on the dates described in the footnotes to Table 5**, the Discharger shall maintain compliance with the interim effluent limitations specified in Table 5. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified in Section IV.A.1.a for the same parameters during the time periods indicated.

Table 5. Interim Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Total Suspended Solids[3]	mg/L	30	40	50	--	--
	lbs/day[1]	530	700	880	--	--
	lbs/day[2]	590	780	980	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)[4]	mg/L	--	--	8.4	--	--
	lbs/day[1]	--	--	150	--	--
	lbs/day[2]	--	--	160	--	--
Nitrate Plus Nitrite (as N)[4]	mg/L	--	--	31	--	--

[1] Based on a design average dry weather flow of 2.1 MGD. Effective immediately and until Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).

[2] Based on a design average dry weather flow of 2.35 MGD. Effective upon Executive Officer's written approval of flow increase (Special Provisions VI.C.6.b).

[3] Interim effluent limitations for total suspended solids are effective through **30 December 2017**.

[4] Interim effluent limitations for ammonia nitrogen, total (as N) and nitrate plus nitrate (as N) are effective through **30 December 2023**.

b. **Total Coliform Organisms. Effective immediately and through 30 December 2022,** effluent total coliform organisms at Monitoring Locations UVS-001 and UVS-002 shall not exceed:

i. 23 MPN/100 mL, as a 7-day median; and
ii. 240 MPN/100 mL, more than once in any 30-day period.

These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified in Section IV.A.1.e for total coliform organisms during the time period indicated.

c. **Mercury, total. Effective immediately and through 30 December 2030,** the effluent calendar year annual total mercury load shall not exceed 24 grams/year. This interim effluent limitation shall apply in lieu of the final effluent limitation for methylmercury (Sections IV.A.1.i).

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in the Old River:

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

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

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

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

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

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

f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCLs) set forth in CCR, Title 22, division 4, chapter 15; 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 MCLs specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

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

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

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

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

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

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

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

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

17. **Turbidity:**

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

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

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

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

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

B. Groundwater Limitations

1. Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the Facility to contain waste constituents in concentrations in excess of natural background quality or cause the following in groundwater:

   a. Beneficial uses to be adversely impacted or water quality objectives to be exceeded; and

   b. Total coliform organisms median of 2.2 MPN/100 mL over any 7-day period.

VI. PROVISIONS

A. Standard Provisions

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

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

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

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

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

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

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

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

      The causes for modification include:

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

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

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

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

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

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

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

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

   ii. Controls any pollutant limited in the Order.

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

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

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

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

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

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

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

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

i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

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

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

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

d. **Pollution Prevention Plans (PPP).** This Order requires the Discharger to prepare and submit PPPs following Water Code section 13263.3(d)(3) for mercury, nitrate plus nitrite, ammonia nitrogen (as N), salinity, TSS, and total coliform organisms. Based on a review of the PPP, this Order may be reopened for addition and/or modification of effluent limitations and requirements for these constituents.

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

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

g. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

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

i. **CV-SALTS.** The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. This Order may be reopened to implement the CV-SALTS initiative.

j. **Ultraviolet Light (UV) Disinfection Operating Specifications.** The UV operating specifications for the upgraded and expanded Facility in this Order are based on the

UV guidelines for media filtration systems developed by the National Water Research Institute (NWRI) and American Water Works Association Research Foundation (AWWARF) titled, "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*." If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation equivalent to Title 22 disinfected tertiary recycled water, or if the Discharger installs a different type of filtration system (e.g., membrane filters), this Order may be reopened to modify the UV operating specifications.

k. **Biosolids Disposal.** This Order requires the Discharger to submit a biosolids disposal study by 1 June 2015. Based on information in the study this Order may be reopened to modify the permit to include requirements to continue and/or modify the biosolids disposal practice.

l. **2013 Ammonia Criteria**. Ammonia criteria for waters where mussels are present were used because freshwater mussels have been surveyed in other parts of the Delta. However, if the Discharger can submit sufficient information indicating mussels are not present in the receiving water through a "mussel study to evaluate presence/absence of mussels", and it is determined that it is not necessary to protect mussels in the receiving water this Order may be reopened to allow for the recalculation procedures to determine the appropriate ammonia criteria.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

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

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

ii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is >10 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iii. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of

the exceedance. Accelerated monitoring shall consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

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

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

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

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

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

(3) A schedule for these actions.

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

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

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

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

c. **Biosolids Disposal Study**. The Discharger is currently disposing of exceptional quality biosolids on a parcel adjacent to the sludge lagoons. The Discharger shall conduct a study to evaluate the impacts to public health and water quality (groundwater and surface water) to continue this activity. The study, at minimum, shall include a characterization of the applied biosolids, the annual application rate, nutrient uptake of vegetation, and impacts to groundwater and surface water (e.g., from metals, nutrients, pathogens, salinity, etc.). The study shall also evaluate the existing groundwater monitoring network for determining impacts to groundwater and evaluating compliance with the groundwater limitations. The Discharger shall submit a study work plan by **1 September 2014** and the final study shall be submitted by **1 June 2015**.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for Mercury.** The Discharger shall prepare and implement a PPP for mercury by **1 January 2015** in accordance with Water Code section 13263.3(d)(3), per the compliance schedule in this Order for methylmercury (Section VI.C.7.c). The minimum requirements for the PPP are outlined in the Fact Sheet (Attachment F, section VI.B.3.a). Annual progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1.). The progress reports shall discuss the effectiveness of the PPP in the reduction of mercury in the discharge, include a summary of mercury and methylmercury monitoring results, and discuss updates to the PPP.

b. **Pollution Prevention Plan (PPP) for Salinity.** The Discharger shall continue to implement its PPP for salinity. Progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1.).

c. **Mercury Exposure Reduction Program.** The Discharger shall participate in a Mercury Exposure Reduction Program (MERP) in accordance with the Basin Plan's Delta Mercury Control Program. By letter dated **21 November 2013**, the Discharger elected to provide financial support in the collective MERP with other Delta dischargers, rather than be individually responsible for any MERP activities. The objective of the MERP is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the MERP objective, elements, and the Discharger's coordination with other stakeholders. The minimum requirements for the exposure reduction work plan are outlined in the Fact Sheet (Attachment F, section VI.B.3.c). The Discharger shall integrate or, at minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. The Discharger shall continue to participate in the group effort to implement the work plan.

4. Construction, Operation and Maintenance Specifications

a. **Turbidity Specifications**

i. **Effective immediately and ending on 30 December 2017**, the turbidity of the secondary treated effluent measured at Monitoring Locations INT-001 and INT-002 shall not exceed:

(a) 10 NTU as a 7-day median of daily averages; and
(b) 40 NTUs at any time.

ii. **Effective 31 December 2017**, 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 INT-001 and INT-002 shall not exceed:

(a) 2 NTU as a daily average;
(b) 5 NTU more than 5 percent of the time within a 24-hour period; and
(c) 10 NTU, at any time.

b. **Ultraviolet Light (UV) Disinfection System Operating Specifications.** The UV disinfection system must be operated in accordance with an operations and maintenance program that assures adequate disinfection, and shall meet the following minimum specifications:

i. **UV Dose**

(a) **Effective immediately and ending on 30 December 2022,** the minimum hourly average UV dose in the UV reactor shall be 80 millijoules per square centimeter (mJ/cm^2).

(b) **Effective 31 December 2022**, the minimum hourly average UV dose in the UV reactor shall be 100 mJ/cm^2.

ii. **UV Transmittance. Effective 31 December 2022**, the minimum hourly average UV transmittance (at 254 nanometers) in the wastewater measured at Monitoring Locations UVS-001 and UVS-002 shall not fall below 55 percent.

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

iv. The lamp sleeves must be cleaned periodically as necessary to meet the UV dose requirements.

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

c. **Treatment Pond Operating Requirements**

i. The sludge ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

iii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

(a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

(b) Weeds shall be minimized.

(c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

iv. Freeboard in the ponds shall not be less than 2 feet (measured vertically to the lowest point of overflow), except if lesser freeboard does not threaten the integrity of the pond, no overflow of the pond occurs, and lesser freeboard is due to direct precipitation or storm water runoff occurring as a result of annual precipitation with greater than a 100-year recurrence interval, or a storm event with an intensity greater than a 25-year, 24-hour storm event.

v. Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the disposal areas or property owned by the Discharger.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 CFR Part 503.

i. Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, division 2, subdivision 1, section 20005, et seq. Removal for further treatment, storage, disposal, or reuse at sites (e.g., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy these specifications.

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

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

ii. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards.

The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not they have been incorporated into this Order.

iii. The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.

iv. Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and U.S. EPA Regional Administrator at least **90 days** in advance of the change.

v. **By 1 December 2014,** the Discharger shall submit a biosolids use or disposal plan to the Central Valley Water Board. The plan shall describe at a minimum:

(a) Sources and amounts of biosolids generated annually.

(b) Location(s) of on-site storage and description of the containment area.

(c) Plans for ultimate disposal.

vi. The Discharger is encouraged to comply with the "Manual of Good Practice for Agricultural Land Application of Biosolids" developed by the California Water Environment Association.

vii. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements (WDRs) issued by the State or Regional Water Boards. In most cases, this means the WDRs contained in the State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (Biosolids General Order). For a biosolids use project to be covered by the Biosolids General Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

b. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Board Order No. 2006-0003-DWQ, Statewide General WDRs for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system.

6. Other Special Provisions

a. **Title 22 (or equivalent) Disinfection Requirements.** By **31 December 2022**, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent, in accordance with the compliance schedule in Section VI.C.7.b.

b. **Facility Expansion (2.35 MGD).** The Discharger is permitted to discharge up to 2.35 MGD to the Old River upon compliance with the following requirements:

i. **Facility Improvements.** The Discharger shall have completed construction and startup of the oxidation ditch/secondary clarifier upgrades, as identified in section II.E of the Fact Sheet, and shall provide evidence certified by the design engineer that the plant is operating properly.

ii. **Request for Increase.** The Discharger shall submit a request for an increase in the permitted flow rate, which demonstrates compliance with item i above. The increase in the permitted discharge flow rate shall not be effective until the Executive Officer approves the Discharger's request in writing.

7. Compliance Schedules

a. **Compliance Schedule for Ammonia and Nitrate Plus Nitrite.** This Order requires compliance with the final effluent limitations for ammonia and nitrate plus nitrite in Section IV.A.1 of this Order by **31 December 2023**. The Discharger shall comply with the following time schedule to ensure compliance with these requirements:

	Task	Date Due
i.	**Submit Method of Compliance Workplan.** Submit workplan that ensures compliance with final effluent limitations for ammonia and nitrate plus nitrite by the final compliance date.	**30 December 2014**
ii.	**Submit and Implement Pollution Prevention Plan (PPP) for Ammonia and Nitrate Plus Nitrite in accordance with Water Code section 13263.3(d)(3).** The PPP shall be prepared and implemented in accordance with attachment F, Section VI.B.3.a of the permit.	**30 December 2014**
iii.	**Rate Analysis Report**. Submit a report with the annual progress report that includes the following: 1) Identification of the funding alternatives and sources, such as revenue bonds, State Revolving Fund loan, etc.; and 2) An evaluation of the source of rate revenue necessary to fund the selected compliance project(s).	**30 June 2015**
iv.	**Complete Construction of Oxidation Ditch and Secondary Clarifier.** Submit letter demonstrating compliance with this task.	**31 December 2015**
v.	**Complete Financing Plan.** Submit with the annual progress report a financing plan for the selected compliance project(s) and a schedule for obtaining funding.	**30 June 2016**
vi.	**Obtain Funding.** Submit with the annual progress report confirmation of compliance with this task.	**30 June 2021**
vii.	**Approval of Project by District Board.** Submit with the annual progress report confirmation of compliance with this task that includes a summary of the outcome of the District Board meeting (e.g., resolution on compliance alternative).	**30 June 2021**
viii.	**Complete Design.** Submit with the annual progress report confirmation of compliance with this task.	**30 June 2022**
ix.	**Award Construction Bid.** Submit a letter confirming and describing detailed information on awarded construction bid process (e.g. date awarded, company, etc.).	**30 August 2022**
x.	**Final Compliance.** Submit report demonstrating compliance with the final effluent limits for ammonia and nitrate plus nitrite.	**31 December 2023**

	Task	Date Due
xi.	**Progress Reports.** The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.	**30 June**, annually, until final compliance.

b. **Compliance Schedule for Title 22 (or equivalent) Disinfection Requirements.** This Order requires compliance with: (1) the final effluent limitations for TSS in Section IV.A.1 and the operational specifications for turbidity in Section VI.C.4.a.ii by **31 December 2017**, and (2) the final effluent limitations for total coliform organisms in Section IV.A.1, the operational specifications for UV disinfection in Section VI.C.4.b, and the Title 22 (or equivalent) disinfection requirements in Section VI.C.6.a by **31 December 2022.** The Discharger shall comply with the following time schedule to ensure compliance with these requirements:

	Task	Date Due
i.	**Submit Method of Compliance Workplan.** Submit workplan that ensures compliance by the final compliance date.	**30 December 2014**
ii.	**Submit and Implement Pollution Prevention Plan (PPP) for TSS, Turbidity, and Total Coliform in accordance with Water Code section 13263.3(d)(3)..** The PPP shall be prepared and implemented in accordance with attachment F, Section VI.B.3.a of the permit.	**30 December 2014**
iii.	**TSS and Turbidity**	
	1. Complete Design Effluent Filtration System Plan. Submit information demonstrating compliance with this task.	**1 April 2015**
	2. Award Construction Bid. Submit a letter confirming and describing detailed information on awarded construction bid process (e.g. date awarded, company, etc.).	**30 August 2016**
	3. Final Compliance with TSS and Turbidity. Submit information demonstrating compliance with the final effluent limits for TSS in Section IV.A.1 and operational specifications for turbidity in Section VI.C.4.a.ii.	**31 December 2017**
iv.	**Total Coliform, UV Disinfection Specifications, and Title 22 (or equivalent) disinfection requirements**	
	1. Rate Analysis Report. Submit a report with the annual progress report that includes the following: a) Identification of the funding alternatives and sources, such as revenue bonds, State Revolving Fund loan, etc.; and **b)** An evaluation of the source of rate revenue necessary to fund the selected compliance project(s).	**30 June 2015**
	2. Complete Financing Plan. Submit with the annual progress report a financing plan for the selected compliance project(s) and a schedule for obtaining funding.	**30 June 2016**

Task	Date Due
3. Obtain Funding. Submit a letter confirming compliance with this task.	**30 June 2020**
4. Approval of Project by District Board. Submit with the annual progress report confirmation of compliance with this task that includes a summary of the outcome of the District Board meeting (e.g., resolution on compliance alternative).	**30 June 2020**
5. Complete UV Improvement Design Plan. Submit with the annual progress report confirmation of compliance with this task.	**30 June 2021**
6. Award Construction Bid. Submit a letter confirming and describing detailed information on awarded construction bid process (e.g. date awarded, company, etc.).	**30 August 2021**
7. Final Compliance. Submit report demonstrating compliance with the final effluent limits for total coliform organisms in Section IV.A.1, the operational specifications for UV disinfection in Section VI.C.4.b, and the Title 22 (or equivalent) disinfection requirements in Section VI.C.6.a.	**31 December 2022**
v Progress Reports. The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.	**30 June**, annually, beginning June 2015 until final compliance

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

Task	Date Due
Phase 1	
i. Submit CVCWA Coordinated Methylmercury Control Study Work Plan	**Complete**
ii. Submit Pollution Prevention Plan (PPP)[1] for Mercury (per Section VI.C.3.a)	**1 January 2015**
iii. Implement CVCWA Coordinated Methylmercury Control Study Work Plan	**Immediately following Executive Officer Approval**
iv. Annual Progress Reports[2]	**30 January, annually**
v. Submit CVCWA Coordinated Methylmercury Control Study Progress Report	**20 October 2015**
vi. Submit Final CVCWA Coordinated Methylmercury Control Study	**20 October 2018[3]**
Phase 2	
vii. Implement methylmercury control programs	**TBD[4]**

Task	Date Due
viii. Full Compliance	**31 December 2030**[3]

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

[2] Beginning **30 January 2015** and annually thereafter until the Facility achieves compliance with the final effluent limitations for methylmercury, the Discharger shall submit annual progress reports on pollution minimization activities implemented and evaluation of their effectiveness, including a summary of total mercury and methylmercury monitoring results.

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

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

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Sections IV.A.1.a, IV.A.1.b, and IV.A.2.a). Compliance with the final and interim effluent limitations for BOD_5 and TSS required in Limitations and Discharge Requirements sections IV.A.1.a and IV.A.2.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements sections IV.A.1.b for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Total Mercury Mass Loading Effluent Limitations (Section IV.A.3.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 monitoring and reporting program and any special studies shall be used for these calculations. The total annual mass loading shall be the sum of the individual calendar months.

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

C. Average Dry Weather Flow Effluent Limitations (Sections IV.A.1.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 effluent limitations 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.e and IV.A.2.b). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance. Compliance with the total coliform effluent limitations shall be ascertained based on sampling at Monitoring Locations UVS-001 and UVS-002.

E. Mass Effluent Limitations. The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a and the Interim Effluent Limitations IV.A.2.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 and Interim Effluent Limitations IV.A.2.a shall not apply. If the effluent flow is below the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations do apply.

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

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

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

H. Temperature Effluent and Receiving Water Limitations (Sections IV.A.1.d and V.A.15.b). Compliance with the final effluent limitations for temperature in sections IV.A.1.d shall be ascertained using the daily average effluent temperature at Monitoring Location EFF-001 and the daily average temperature of the receiving water measured on the same day at Monitoring Location RSW-001. Compliance with the receiving water limitation for temperature in section V.A.15.b shall be determined based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.

I. 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 permit, will not be used directly to determine that the discharge is in violation of this Permit. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger that is not conducted by the Delta RMP 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 Permit.

ATTACHMENT A – DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of

measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the n/2 and n/2+1).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ATTACHMENT B – MAP

Figure B-1. Facility Map

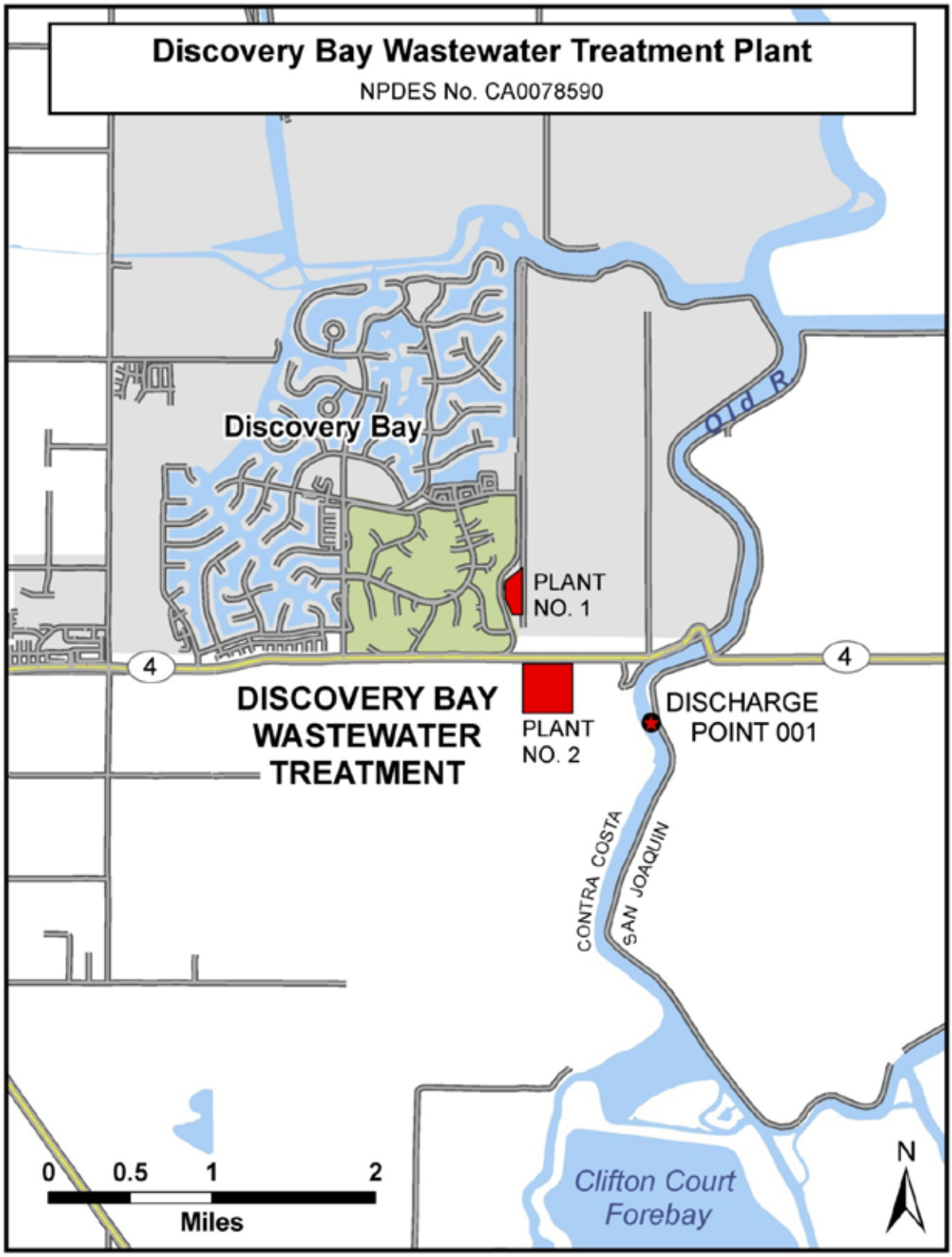
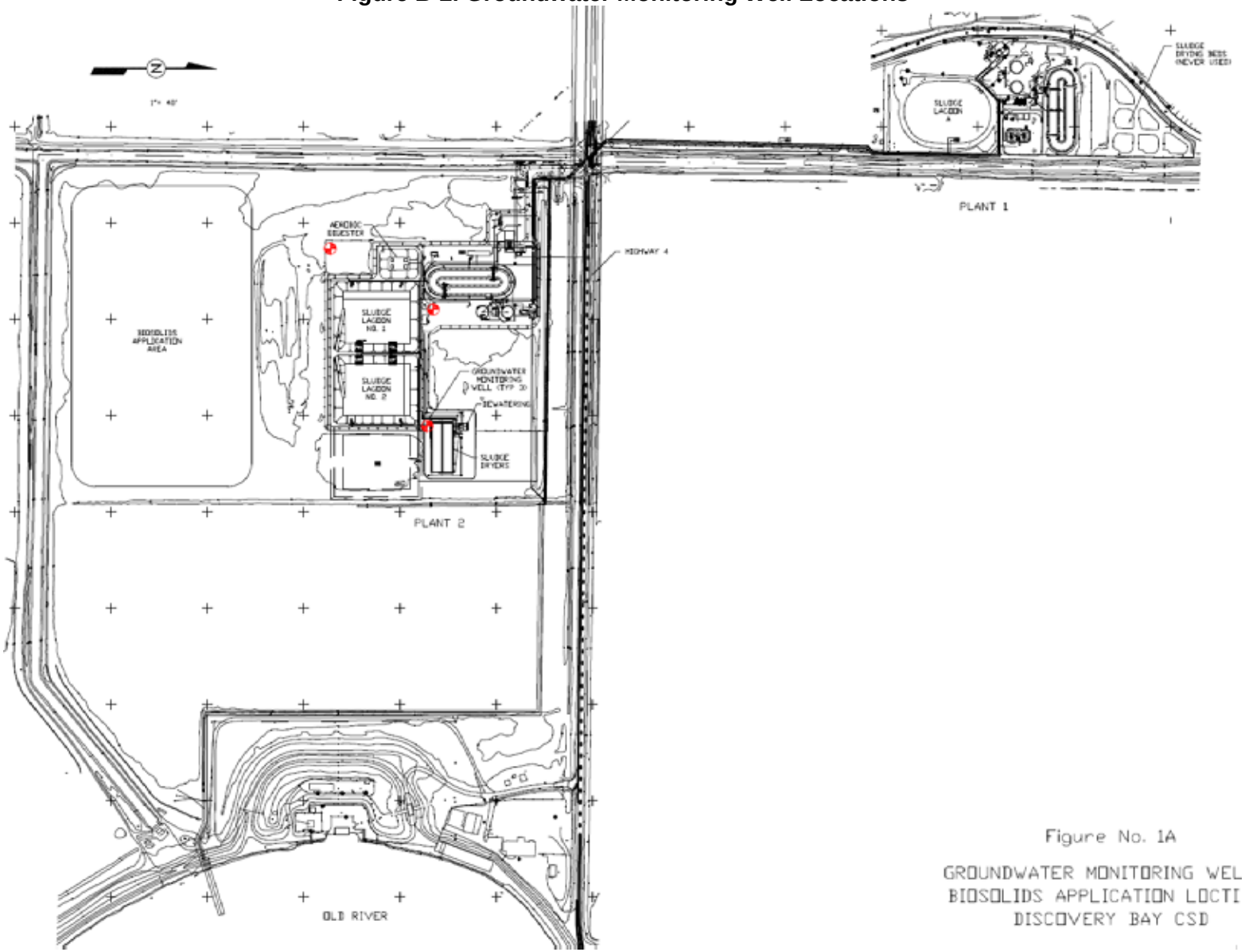
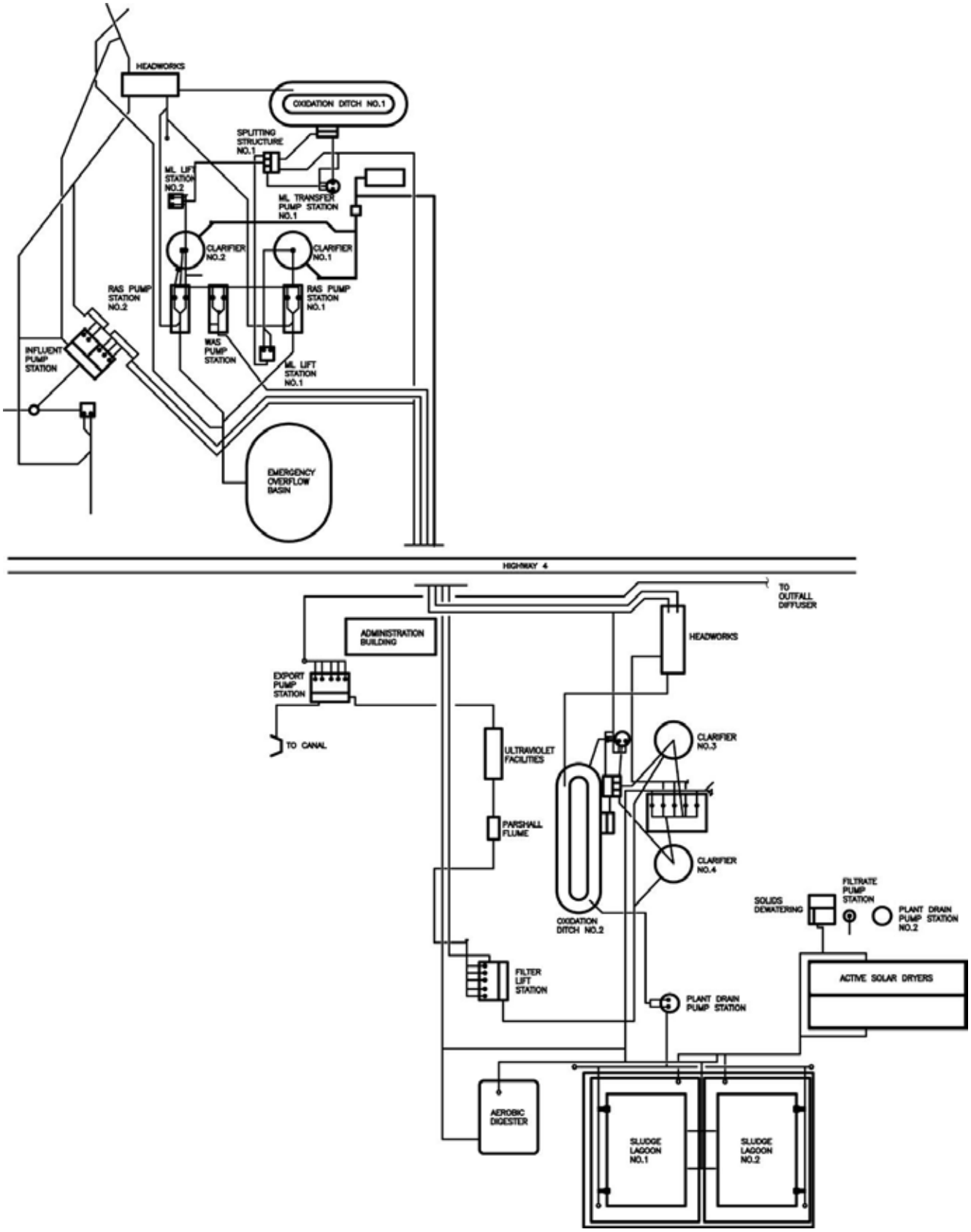


Figure B-2. Groundwater Monitoring Well Locations



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

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

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

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

G. Bypass

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

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

H. Upset

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

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

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

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

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

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

III. STANDARD PROVISIONS – MONITORING

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

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

IV. STANDARD PROVISIONS – RECORDS

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

B. Records of monitoring information shall include:

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

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

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

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

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

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

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

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

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

C. Monitoring Reports

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

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

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

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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

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

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

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

F. Planned Changes

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

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

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

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.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

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

H. Other Noncompliance

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

I. Other Information

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

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

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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

I. GENERAL MONITORING PROVISIONS

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

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

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

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

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

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

G. In accordance with Clean Water Act section 308, the Discharger shall provide results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study annually to the State Water Resources Control Board at the following address:

State Water Board Quality Assurance Program Officer
Office of Information Management and Analysis
State Water Resources Control Board
1001 I Street, Sacramento, CA 95814

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	A location where a representative sample of the influent into the Facility can be collected prior to entering the treatment process.
001	EFF-001	A location where a representative sample of the effluent from the Facility can be collected after all treatment processes and prior to commingling with other waste streams or being discharged into the Old River.
--	RSW-001	500 feet north of the point of discharge to the Old River.
--	RSW-002	200 feet south of the point of discharge to the Old River.
--	RGW-001, RGW-002, and RGW-003	Groundwater monitoring well network.
--	INT-001	Internal monitoring location located immediately downstream of the secondary clarifiers (current treatment system) or tertiary filters (upgraded treatment system) and prior to the ultraviolet light (UV) disinfection system UV-3000.
--	INT-002	Internal monitoring location located immediately downstream of the secondary clarifiers (current treatment system) or tertiary filters (upgraded treatment system) and prior to the UV disinfection system UV-3000Plus.
--	UVS-001	A location where a representative sample of wastewater can be collected immediately downstream of the UV disinfection system UV-3000.
--	UVS-002	A location where a representative sample of wastewater can be collected immediately downstream of the UV disinfection system UV-3000Plus.
--	PND-001	Sludge Lagoon #1
--	PND-002	Sludge Lagoon #2
--	BIO-001	A location where a representative sample of biosolids can be collected.
--	SPL-001	A location where a representative sample location for the municipal water supply can be collected.

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

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
pH	standard units	Grab	1/Week	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
Non-Conventional Pollutants				
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[2]
Temperature	°F	Grab	1/Week	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]

[1] 24-hour flow proportional composite.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	2/Week	[2]
	lbs/day	Calculate	2/Week	--
pH	standard units	Grab	1/Week[3,4]	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	2/Week	[2]
	lbs/day	Calculate	2/Week	--
Priority Pollutants				
Copper, Total Recoverable	µg/L	Grab	2/Month	[2,5]
Mercury, Total Recoverable	ng/L	Grab	1/Quarter	[2,5,6]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants and Other Constituents of Concern	See Section IX.D	See Section IX.D	See Section IX.D	[2,5]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week[3,7]	[2]
	lbs/day	Calculate	1/Week	--
Chloride	mg/L	Grab	1/Month	[2]
Chlorpyrifos	µg/L	Grab	1/Year	[2]
Diazinon	µg/L	Grab	1/Year	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[2]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month[8]	[2]
Mercury (methyl)	ng/L	Grab	1/Quarter	[2,6]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	2/Month[9]	[2]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	2/Month[9]	[2]
Settleable Solids	ml/L	Grab	1/Month	[2]
Temperature	°F	Grab	1/Week[3,4]	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]

[1] 24-hour flow proportional composite.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[3] pH and temperature shall be recorded at the time of ammonia sample collection.
[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA -approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
[5] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment E, Section IX.D).
[6] 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), and shall be analyzed by U.S. EPA method 1630/1631 (Revision E) with a reporting level of 0.05 ng/L for methylmercury and 0.5 ng/L for total mercury.
[7] Concurrent with whole effluent toxicity monitoring.
[8] Hardness samples shall be collected concurrently with metals samples.
[9] Monitoring for nitrite and nitrate shall be conducted concurrently.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

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

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

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).

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

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

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

1. *Monitoring Frequency* – The Discharger shall perform quarterly three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.

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

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

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

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

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

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

Table E-4. Chronic Toxicity Testing Dilution Series

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

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

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

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

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

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

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

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

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

   b. The statistical methods used to calculate endpoints;

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

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

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

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

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

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

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

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

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

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

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Locations PND-001 and PND-002

1. The Discharger shall monitor the sludge lagoons at monitoring locations PND-001 and PND-002, as follows:

Table E-5. Land Discharge Monitoring Requirements

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

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger shall implement the Receiving Water Monitoring Requirements in Attachment E, Sections VIII.A.1 and VIII.A.2 of this Order. However, in lieu of conducting the individual monitoring specified in Attachment E, Sections VIII.A.1 and VIII.A.2 of this Order (including visual observations) the Discharger may elect to participate in the Delta Regional Monitoring Program. [1] The Discharger may choose to conduct all or part of the receiving water monitoring through the Delta Regional Monitoring Program. If the Discharger elects to cease all or part of the individual receiving water monitoring and instead participates in the Delta Regional Monitoring Program, the Discharger shall submit a letter signed by an authorized representative informing the Board that the Discharger will participate in the Delta Regional Monitoring Program, and the date on which individual receiving water monitoring required under Attachment E, Sections VIII.A.1 and VIII.A.2 will cease, or be modified, and specific monitoring locations and constituent combinations that will no longer be conducted individually. Written approval of the Discharger's request, by the Executive Officer, is required prior to discontinuing part or all of individual receiving water monitoring. Approval by the Executive Officer is not required prior to participating in the Delta Regional Monitoring Program.

If the Discharger participates in the Delta Regional Monitoring Program in lieu of conducting individual receiving water monitoring, the Discharger shall continue to participate in the Delta Regional Monitoring Program until such time as the Discharger informs the Board that participation in the Delta RMP will cease and individual monitoring is reinstituted. Receiving water monitoring under Attachment E, Sections VIII.A.1 and VIII.A.2, is not required under this Order so long as the Discharger adequately supports the Delta Regional Monitoring Program. If the Discharger fails to adequately support the Delta Regional Monitoring Program, as defined by the Delta RMP Steering Committee, the Discharger shall reinstitute individual receiving water monitoring under Attachment E, Sections VIII.A.1 and VIII.A.2, upon written notice from the Executive Officer. During participation in the Delta RMP, the Discharger may conduct and submit any or part of the receiving water monitoring included in this Monitoring and Reporting Program that is deemed appropriate by the Discharger.

[1] If the Discharger elects to participate in the Delta RMP, it shall continue to submit receiving water data for temperature. At minimum, one representative upstream receiving water temperature sample shall be submitted annually for the month of January. The temperature data shall be submitted in the January self-monitoring report and will be used to determine compliance with the temperature effluent limitation. Temperature data may be collected by the Discharger for this purpose or the Discharger may submit representative temperature data from the Delta RMP or other appropriate monitoring programs (e.g., Department of Water Resources, United States Geological Survey, etc.).

Delta RMP data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Permit. Delta RMP monitoring stations are established generally as "integrator sites" to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta RMP 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 RMP monitoring data, along with individual Discharger data, may be used to help establish background receiving water quality for Reasonable Potential analyses in an NPDES Permit after evaluation of the applicability of the data for that purpose. Delta RMP 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.

During the period of participation in the Delta Regional Monitoring Program, the Discharger shall continue to report any individually conducted receiving water monitoring data in the Electronic Self-Monitoring Reports (eSMR) according to the Monitoring and Reporting Program. In addition, 1) with each submitted eSMR, the Discharger's eSMR cover letter shall state that the Discharger is participating in the Delta Regional Monitoring Program in lieu of conducting the individual receiving water monitoring program required by the permit, and 2) with each annual report, the Discharger shall attach a copy of the letter originally submitted to the Central Valley Water Board describing the monitoring location(s) and constituent combinations that will no longer be conducted individually.

A. Monitoring Locations RSW-001 and RSW-002

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

Table E-6. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Direction of Old River Flow	North/South	Observation	Whenever Sampling	--
Conventional Pollutants				
Fecal Coliform Organisms	MPN/100 mL	Grab	1/Quarter	[1]
pH	standard units	Grab[2]	1/Month	[1]
Priority Pollutants				
Copper, Total Recoverable	µg/L	Grab	1/Quarter	[1,3]
Priority Pollutants and Other Constituents of Concern	See Section IX.D	See Section IX.D	See Section IX.D	[1,3,4]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month	[1]
Chloride	mg/L	Grab	1/Month	[1]
Dissolved Oxygen	mg/L	Grab[2]	1/Month	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab[2]	1/Month	[1]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	[1]
Temperature	°F(°C)	Grab[2]	1/Month	[1]
Total Dissolved Solids	mg/L	Grab	1/Month	[1]
Turbidity	NTU	Grab[2]	1/Month	[1]

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

[2] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA -approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

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

[4] Monitoring required at Monitoring Location RSW-001 only.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001 and RSW-002. Attention shall be given to the presence or absence of:

   a. Floating or suspended matter;
   b. Discoloration;
   c. Bottom deposits;
   d. Aquatic life;
   e. Visible films, sheens, or coatings;
   f. Fungi, slimes, or objectionable growths;
   g. Potential nuisance conditions.

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

B. Monitoring Locations RGW-001, RGW-002, and RGW-003

1. Prior to construction and/or beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Well Nos. RGW-001, RGW-002, and RGW-003) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

2. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at Monitoring Locations RGW-001, RGW-002, RGW-003, and any new groundwater monitoring wells shall include, at a minimum, the following:

Table E-7. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Quarter	--
Groundwater Elevation[1]	±0.01 feet	Calculated	1/Quarter	--
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	degrees	Calculated	1/Quarter	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	[2]
pH	standard units	Grab	1/Quarter	[2]
Total Coliform Organisms	MPN/100 mL	Grab	1/Quarter	[2]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	[2]

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well. The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow, which must be reported.

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

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected once during the permit term at Monitoring Location BIO-001 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).

b. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with U.S. EPA 's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for the metals listed in Title 22.

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

d. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

B. Municipal Water Supply

1. Monitoring Location SPL-001

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

Table E-8. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chloride[1]	mg/L	Grab	1/Year	[2]

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

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

C. Ultraviolet Light (UV) Disinfection System

1. Monitoring Locations UVS-001, UVS-002, INT-001, and INT-002

The Discharger shall monitor the UV disinfection system at Monitoring Locations UVS-001, UVS-002, INT-001, and INT-002 as follows:

Table E-9. Ultraviolet Light Disinfection System Monitoring Requirements

Parameter	Units	Sample Type	Monitoring Location	Minimum Sampling Frequency
Flow	MGD	Meter	UVS-001 and UVS-002	Continuous[1]
Turbidity	NTU	Meter	INT-001 and INT-002	Continuous[1,2]
Number of UV banks in operation	Number	Observation	N/A	Continuous[1]
UV Transmittance	Percent (%)	Meter	UVS-001 and UVS-002	Continuous[1]
UV Dose[3]	mJ/cm^2	Calculated	UVS-001 and UVS-002	Continuous[1]
Total Coliform Organisms	MPN/100 mL	Grab	UVS-001 and UVS-002	3/Week

[1] For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation. If analyzer(s) fail to provide continuous monitoring for more than two hours and influent and/or effluent from the disinfection process is not diverted for retreatment, the Discharger shall obtain and report hourly manual and/or grab sample results. The Discharger shall not decrease power settings or reduce the number of UV lamp banks in operation while the continuous analyzers are out of service and water is being disinfected.
[2] Report daily average and maximum turbidity.
[3] Report daily minimum hourly UV dose and daily average UV dose. The minimum hourly average dose shall consist of lowest hourly average dose provided in any channel that had at least one bank of lamps operating during the hour interval. For channels that did not operate for the entire hour interval, the dose will be averaged based on the actual operation time.

D. Effluent and Receiving Water Characterization

If the Discharger is participating in the Delta Regional Monitoring Program as described in Attachment E, Section VIII, the Receiving Water portion of this Characterization Monitoring is not required. However, the Report of Waste Discharge 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. The Discharger may request that the RMP perform sampling and laboratory analysis to address all or a portion of the monitoring under this Characterization Monitoring with the understanding that the Discharger will provide funding to the RMP sufficient to reimburse all of the costs of this additional effort. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with this Characterization Monitoring. 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.

1. **Monitoring (2017 or 2018).** Quarterly samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-10, below. Quarterly monitoring shall be conducted in either the year 2017 or 2018 (four consecutive samples, evenly distributed throughout the year) and the results of such monitoring be submitted to the Central Valley Water Board with the monthly self-monitoring reports. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.
2. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
3. **Sample type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-10, below.

Table E-10. Effluent and Receiving Water Characterization Monitoring

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
1,1-Dichloroethane	µg/L	Grab	1
1,1-Dichloroethene	µg/L	Grab	0.5
1,1,1-Trichloroethane	µg/L	Grab	2
1,1,2-Trichloroethane	µg/L	Grab	0.5
1,1,2,2-Tetrachloroethane	µg/L	Grab	0.5
1,2-Dichlorobenzene	µg/L	Grab	2
1,2-Dichloroethane	µg/L	Grab	0.5
cis-1,2-Dichloroethene	µg/L	Grab	
1,2-Dichloropropane	µg/L	Grab	0.5
1,2,4-Trichlorobenzene	µg/L	Grab	1
1,3-Dichlorobenzene	µg/L	Grab	2
1,3-Dichloropropene	µg/L	Grab	0.5
1,4-Dichlorobenzene	µg/L	Grab	2
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	2
Bromomethane	µg/L	Grab	2
Carbon tetrachloride	µg/L	Grab	0.5
Chlorobenzene (mono chlorobenzene)	µg/L	Grab	2
Chloroethane	µg/L	Grab	2
2- Chloroethyl vinyl ether	µg/L	Grab	1
Chloroform	µg/L	Grab	2

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Chloromethane	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	--
Trichlorofluoromethane	µg/L	Grab	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	--
Styrene	µg/L	Grab	--
Xylenes	µg/L	Grab	--
1,2-Benzanthracene	µg/L	24-hr Composite[2]	5
1,2-Diphenylhydrazine	µg/L	24-hr Composite[2]	1
2-Chlorophenol	µg/L	24-hr Composite[2]	5
2,4-Dichlorophenol	µg/L	24-hr Composite[2]	5
2,4-Dimethylphenol	µg/L	24-hr Composite[2]	2
2,4-Dinitrophenol	µg/L	24-hr Composite[2]	5
2,4-Dinitrotoluene	µg/L	24-hr Composite[2]	5
2,4,6-Trichlorophenol	µg/L	24-hr Composite[2]	10
2,6-Dinitrotoluene	µg/L	24-hr Composite[2]	5
2-Nitrophenol	µg/L	24-hr Composite[2]	10
2-Chloronaphthalene	µg/L	24-hr Composite[2]	10
3,3'-Dichlorobenzidine	µg/L	24-hr Composite[2]	5
3,4-Benzofluoranthene	µg/L	24-hr Composite[2]	10
4-Chloro-3-methylphenol	µg/L	24-hr Composite[2]	5
4,6-Dinitro-2-methylphenol	µg/L	24-hr Composite[2]	10
4-Nitrophenol	µg/L	24-hr Composite[2]	10
4-Bromophenyl phenyl ether	µg/L	24-hr Composite[2]	10
4-Chlorophenyl phenyl ether	µg/L	24-hr Composite[2]	5
Acenaphthene	µg/L	24-hr Composite[2]	1
Acenaphthylene	µg/L	24-hr Composite[2]	10
Anthracene	µg/L	24-hr Composite[2]	10
Benzidine	µg/L	24-hr Composite[2]	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	24-hr Composite[2]	2
Benzo(g,h,i)perylene	µg/L	24-hr Composite[2]	5
Benzo(k)fluoranthene	µg/L	24-hr Composite[2]	2
Bis(2-chloroethoxy) methane	µg/L	24-hr Composite[2]	5
Bis(2-chloroethyl) ether	µg/L	24-hr Composite[2]	1
Bis(2-chloroisopropyl) ether	µg/L	24-hr Composite[2]	10
Bis(2-ethylhexyl) phthalate	µg/L	24-hr Composite[2]	5[1]
Butyl benzyl phthalate	µg/L	24-hr Composite[2]	10
Chrysene	µg/L	24-hr Composite[2]	5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Di-n-butylphthalate	µg/L	24-hr Composite[2]	10
Di-n-octylphthalate	µg/L	24-hr Composite[2]	10
Dibenzo(a,h)-anthracene	µg/L	24-hr Composite[2]	0.1
Diethyl phthalate	µg/L	24-hr Composite[2]	10
Dimethyl phthalate	µg/L	24-hr Composite[2]	10
Fluoranthene	µg/L	24-hr Composite[2]	10
Fluorene	µg/L	24-hr Composite[2]	10
Hexachlorocyclopentadiene	µg/L	24-hr Composite[2]	5
Indeno(1,2,3-c,d)pyrene	µg/L	24-hr Composite[2]	0.05
Isophorone	µg/L	24-hr Composite[2]	1
N-Nitrosodiphenylamine	µg/L	24-hr Composite[2]	1
N-Nitrosodimethylamine	µg/L	24-hr Composite[2]	5
N-Nitrosodi-n-propylamine	µg/L	24-hr Composite[2]	5
Nitrobenzene	µg/L	24-hr Composite[2]	10
Pentachlorophenol	µg/L	24-hr Composite[2]	1
Phenanthrene	µg/L	24-hr Composite[2]	5
Phenol	µg/L	24-hr Composite[2]	1
Pyrene	µg/L	24-hr Composite[2]	10
Aluminum[4]	µg/L	24-hr Composite[2]	--
Antimony[4]	µg/L	24-hr Composite[2]	5
Arsenic[4]	µg/L	24-hr Composite[2]	10
Asbestos	µg/L	24-hr Composite[2]	--
Barium[4]	µg/L	24-hr Composite[2]	--
Beryllium[4]	µg/L	24-hr Composite[2]	2
Cadmium[4]	µg/L	24-hr Composite[2]	0.5
Chromium (III)[4]	µg/L	24-hr Composite[2]	50
Chromium (VI)	µg/L	24-hr Composite[2]	10
Copper[3, 4]	µg/L	24-hr Composite[2]	2
Cyanide[4]	µg/L	24-hr Composite[2]	5
Fluoride	µg/L	24-hr Composite[2]	--
Iron[4]	µg/L	24-hr Composite[2]	--
Lead[4]	µg/L	24-hr Composite[2]	0.5
Mercury[3]	µg/L	24-hr Composite[2]	0.5
Manganese[4]	µg/L	24-hr Composite[2]	--
Molybdenum	µg/L	24-hr Composite[2]	--
Nickel[4]	µg/L	24-hr Composite[2]	20
Selenium	µg/L	24-hr Composite[2]	5
Silver[4]	µg/L	24-hr Composite[2]	0.25
Thallium[4]	µg/L	24-hr Composite[2]	1
Tributyltin	µg/L	24-hr Composite[2]	--
Zinc[4]	µg/L	24-hr Composite[2]	20
4,4'-DDD	µg/L	24-hr Composite[2]	0.05
4,4'-DDE	µg/L	24-hr Composite[2]	0.05
4,4'-DDT	µg/L	24-hr Composite[2]	0.01
alpha-Endosulfan	µg/L	24-hr Composite[2]	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite[2]	0.01
Alachlor	µg/L	24-hr Composite[2]	--
Aldrin	µg/L	24-hr Composite[2]	0.005
beta-Endosulfan	µg/L	24-hr Composite[2]	0.01
beta-Hexachlorocyclohexane	µg/L	24-hr Composite[2]	0.005

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Chlordane	µg/L	24-hr Composite[2]	0.1
delta-Hexachlorocyclohexane	µg/L	24-hr Composite[2]	0.005
Dieldrin	µg/L	24-hr Composite[2]	0.01
Endosulfan sulfate	µg/L	24-hr Composite[2]	0.05
Endrin	µg/L	24-hr Composite[2]	0.01
Endrin Aldehyde	µg/L	24-hr Composite[2]	0.01
Heptachlor	µg/L	24-hr Composite[2]	0.01
Heptachlor Epoxide	µg/L	24-hr Composite[2]	0.01
Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite[2]	0.02
PCB-1016	µg/L	24-hr Composite[2]	0.5
PCB-1221	µg/L	24-hr Composite[2]	0.5
PCB-1232	µg/L	24-hr Composite[2]	0.5
PCB-1242	µg/L	24-hr Composite[2]	0.5
PCB-1248	µg/L	24-hr Composite[2]	0.5
PCB-1254	µg/L	24-hr Composite[2]	0.5
PCB-1260	µg/L	24-hr Composite[2]	0.5
Toxaphene	µg/L	24-hr Composite[2]	0.5
Atrazine	µg/L	24-hr Composite[2]	--
Bentazon	µg/L	24-hr Composite[2]	--
Carbofuran	µg/L	24-hr Composite[2]	--
2,4-D	µg/L	24-hr Composite[2]	--
Dalapon	µg/L	24-hr Composite[2]	--
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	24-hr Composite[2]	--
Di(2-ethylhexyl)adipate	µg/L	24-hr Composite[2]	--
Dinoseb	µg/L	24-hr Composite[2]	--
Diquat	µg/L	24-hr Composite[2]	--
Endothal	µg/L	24-hr Composite[2]	--
Ethylene Dibromide	µg/L	24-hr Composite[2]	--
Methoxychlor	µg/L	24-hr Composite[2]	--
Molinate (Ordram)	µg/L	24-hr Composite[2]	--
Oxamyl	µg/L	24-hr Composite[2]	--
Picloram	µg/L	24-hr Composite[2]	--
Simazine (Princep)	µg/L	24-hr Composite[2]	--
Thiobencarb	µg/L	24-hr Composite[2]	--
2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite[2]	--
2,4,5-TP (Silvex)	µg/L	24-hr Composite[2]	--
Boron	µg/L	24-hr Composite[2]	--
Chloride[3]	mg/L	24-hr Composite[2]	--
Flow	MGD	--	--
Hardness (as $CaCO_3$)	mg/L	24-hr Composite[2]	--
Foaming Agents (MBAS)	µg/L	24-hr Composite[2]	--
Mercury, Methyl[3]	ng/L	24-hr Composite[2]	0.06
Nitrate (as N)[3]	mg/L	24-hr Composite[2]	2.0
Nitrite (as N)	mg/L	24-hr Composite[2]	0.4
Phosphorus, Total (as P)	mg/L	24-hr Composite[2]	--
Sulfate	mg/L	24-hr Composite[2]	500
Sulfide (as S)	mg/L	24-hr Composite[2]	--
Sulfite (as SO_3)	mg/L	24-hr Composite[2]	--
Temperature[3]	^oC	Grab	--

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Ammonia Nitrogen, Total (as N)	mg/L	Grab	--
Total Kjeldahl Nitrogen (TKN)	mg/L	Grab	--
Total organic carbon (TOC)	mg/L	24-hr Composite[2]	--
Dissolved organic carbon (DOC)	mg/L	24-hr Composite[2]	--

[1] The reporting levels required in this table for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.
[2] 24-hour flow proportional composite.
[3] Receiving water sampling only.
[4] Receiving water sampling shall include dissolved and total recoverable metals. Effluent sampling shall include total recoverable metals.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self-Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMRs are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

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

Table E-11. 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
5/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
2/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
2/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
1/Year	Permit effective date	January 1 through December 31	1 February of following year

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

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

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

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

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

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

   d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no

time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

6. The Discharger shall submit SMRs in accordance with the following requirements:

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

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

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

   a. **Average Dry Weather Flow.** The Discharger shall calculate and report the average dry weather flow for the effluent. The average dry weather flow shall be calculated as specified in Section VII.C of the Limitations and Discharge Requirements and reported in the December SMR.

   b. **Calendar Annual Average Limitations**. For constituents with effluent limitations specified as "calendar annual average" (i.e., 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.

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

$$\text{Mass Loading (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34$$

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

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

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

f. **Total Calendar Annual Mass Loading Mercury Effluent Limitation.** 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 Limitations and Discharge Requirements.

g. **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 Limitations and Discharge Requirements.

h. **Temperature Effluent and Receiving Water Limitations**. To determine compliance with Effluent Limitations IV.A.1.d, the Discharger shall calculate and report the difference in the daily average effluent temperature at Monitoring Locations EFF-001 and RSW-001 consistent with the Compliance Determination Language in Section VII.H of the Limitations and Discharge Requirements. To determine compliance with Receiving Water Limitation V.A.15.b, the Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.

i. **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.f and consistent with the Compliance Determination Language in Section VII.G of the Limitations and Discharge Requirements.

C. Discharge Monitoring Reports (DMRs)

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

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

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

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

D. Other Reports

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

Table E-12. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Pollution Prevention Plan (PPP) for Mercury and Compliance Schedule for Methylmercury, Progress Report (Special Provisions VI.C.3.a and VI.C.7.c)	**30 January,** annually
Compliance Schedule for Ammonia and Nitrate Plus Nitrite, Progress Report (Special Provisions VI.C.7.a)	**30 June,** annually
Pollution Prevention Plan (PPP) for Salinity, Progress Report (Special Provision VI.C.3.b)	**30 January,** annually
Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study, Progress Report (Special Provisions VI.C.2.b and VI.C.7.b)	**20 October 2015**

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

3. **By 15 August 2014**, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those

cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Attachment E, Section IX.D provides required maximum reporting levels in accordance with the SIP.

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

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

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

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

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

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

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

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

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5B070105003
Discharger	Town of Discovery Bay Community Services District
Name of Facility	Discovery Bay Wastewater Treatment Plant
Facility Address	2500 Channel Road (Plant 1) and 17501 Highway 4 (Plant 2) Discovery Bay, CA 94505 Contra Costa County
Facility Contact, Title and Phone	Rick Howard, General Manager, (925) 634-1131
Authorized Person to Sign and Submit Reports	Rick Howard, General Manager, (925) 634-1131
Mailing Address	1800 Willow Lake Road, Discovery Bay, CA 94505
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	A
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	Existing Plant: 2.1 million gallons per day (MGD), average dry weather flow Expanded Plant: 2.35 MGD, average dry weather flow
Facility Design Flow	Existing Plant: 2.1 MGD, average dry weather flow Expanded Plant: 2.35 MGD, average dry weather flow
Watershed	Sacramento-San Joaquin Delta
Receiving Water	Old River
Receiving Water Type	Estuary

A. Veolia West Operating Services, Inc. is the operator of the Discovery Bay Wastewater Treatment Plant (hereinafter Facility), a POTW. The Town of Discovery Bay Community Services District is the owner of the Facility. The Town of Discovery Bay Community Services District is hereinafter referred to as the Discharger.

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 Old River, a water of the United States, within the Sacramento-San Joaquin Delta. The Discharger was previously regulated by Order R5-2008-0179-01 (as amended by Order R5-2012-0030) and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0078590 adopted on 4 December 2008, amended on 7 June 2012, and expired on 30 November 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its WDR's and NPDES permit on 3 June 2013. An amended ROWD was submitted on 10 June 2013. The application was deemed complete on 3 September 2013. In addition, the Discharger submitted an amendment of the ROWD on 21 February 2014 with a request to increase the average dry weather flow discharge to Old River to 2.35 MGD. A site visit was conducted on 2 October 2013 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the Town of Discovery Bay and serves a population of approximately 16,000. The current design average dry weather flow capacity of the Facility is 2.1 MGD.

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility includes two plants (Plant 1 and Plant 2), which each consist of a Hycor headworks screen, an oxidation ditch, and two secondary clarifiers. Plant 1 also includes a flow equalization and storage basin (labeled "Emergency Overflow Basin" on Attachment C) and Plant 2 contains two ultraviolet light (UV) disinfection systems. The influent is split between Plant 1 (40%) and Plant 2 (60%). The secondary treated effluent from both plants converges at Plant 2 and then flows equally into the two UV disinfection system channels prior to discharge at Discharge Point 001 to the Old River.

Sludge handling takes place at Plant 2 and consists of an aerated clay-lined lagoon (referred to as an aerobic digester), two clay lined sludge lagoons, three belt filter presses, and four greenhouse solar drying beds. The Discharger produces Class A biosolids. Biosolids are stored on site in the solar drying bed buildings or adjacent to the buildings on a concrete floor and disposed on a 25 acre field adjacent to the Facility. This Order requires the Discharger to conduct a study to evaluate the impacts of disposing of exceptional quality biosolids in this manner. Based on the results of the study, this Order may be reopened to regulate this biosolids disposal activity.

B. Discharge Points and Receiving Waters

1. Plant 1 is located in Section 31, T1N, R3E, MDB&M and Plant 2 is located in Section 31, T1N, R4E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to the Old River, a water of the United States within the Sacramento-San Joaquin Delta, at a point latitude 37° 53' 08" N and longitude 121° 34' 30" W.

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

Effluent limitations contained in Order R5-2008-0179-01 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2008-0179-01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (January 2009 – December 2012)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Biochemical Oxygen Demand (5-day @ 20ºC)	mg/L	20	40	50	4.6	5.7	6.1
	lbs/day	350	700	875	52	61	70
	% removal	85	--	--	NR	--	--
Total Suspended Solids	mg/L	30	40	50	21	44	66
	lbs/day	525	700	875	314	651	1,061
	% removal	85	--	--	NR	--	--
pH	standard units	--	--	6.5 – 8.5	--	--	7.1 – 8.2
Copper, Total Recoverable	µg/L	50	--	70	45	--	45
Nitrate Nitrogen, Total (as N)	mg/L	73	--	126	22	--	28
Ammonia Nitrogen, Total (as N)	mg/L	10	--	30	1.2	--	5.5
	lbs/day	177	--	525	17	--	74
Acute Toxicity	% survival	--	--	70[1]/90[2]	--	--	85[3]
Temperature	ºF	--	--	[4]	--	--	13[5]
Total Coliform Organisms	MPN/ 100 mL	--	23[6]	240[7]	--	--	900
Average Daily Discharge Flow	MGD	--	--	2.1	--	--	2.8
Electrical Conductivity @ 25°C	µmhos/cm	2,100[8]	--	--	2,192[9]	--	--
Iron, Total Recoverable	µg/L	300[8]	--	--	72[9]	--	--
Aluminum, Total Recoverable	µg/L	200[8]	--	--	78[9]	--	--

Parameter	Units	Effluent Limitation			Monitoring Data (January 2009 – December 2012)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

NR Not Reported
[1] Minimum for any one bioassay.
[2] Median for any three consecutive bioassays.
[3] Represents the minimum observed percent survival.
[4] The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20ºF.
[5] Represents the maximum observed temperature difference between the effluent and upstream receiving water at Monitoring Locations EFF-001 and RSW-001.
[6] Applied as a 7-day median effluent limitation.
[7] Not to be exceeded more than once in any 30-day period.
[8] Applied as an annual average effluent limitation.
[9] Represents the maximum observed annual average effluent concentration.

D. Compliance Summary

1. The Central Valley Water Board issued Administrative Civil Liability (ACL) Complaint No. R5-2009-0595 on 17 December 2009 which proposed to assess a civil liability of $24,000 against the Discharger for violations of effluent limitations in Orders R5-2003-0067 and R5-2008-0179 for total coliform organisms and total suspended solids (TSS) that occurred between 1 January 2009 and 31 August 2009. The Discharger settled this ACL by payment.

2. The Central Valley Water Board issued ACL Complaint No. R5-2011-0576 on 6 May 2011 which proposed to assess a civil liability of $15,000 against the Discharger for violations of effluent limitations in Order R5-2008-0179 for electrical conductivity and total coliform organisms that occurred between 1 September 2009 and 28 February 2011. The Discharger settled this ACL by payment.

3. The Central Valley Water Board issued ACL Order No. R5-2012-0526 on 20 April 2012 which assessed a civil liability of $241,000 against the Discharger for violations of Orders R5-2003-0067 and R5-2008-0179 and the State Water Resources Control Board (State Water Board) General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ for 10 sanitary sewer overflows (SSOs) from its collection system between April 2008 and June 2010.

4. The Central Valley Water Board issued ACL Complaint No. R5-2013-0581 on 13 September 2013 which proposed to assess a civil liability of $54,000 against the Discharger for violations of effluent limitations in Orders R5-2008-0179 and R5-2008-0179-01 for electrical conductivity and total coliform organisms that occurred between 1 March 2011 and 30 April 2013. The Discharger settled a portion of this ACL ($19,500) by payment. The remainder of the penalty ($34,500) may be permanently suspended pursuant to Water Code section 13385(l), pending completion of a Supplemental Environmental Project. The Discharger has chosen to complete the “Research on Removal of Trace Organic Compounds at Discovery Bay Pilot Wetlands”.

E. Planned Changes

The Discharger requested a flow increase from an ADWF of 2.1 MGD to 2.35 MGD. In order to accommodate the anticipated development in the service area, the Discharger recently completed upgrades to the influent pump station and is constructing an oxidation ditch, secondary clarifier, and installing additional return activated sludge pumps. The upgrade project is expected to be complete by 31 December 2015.

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, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. The Basin Plan in Table II-1, Section II, identifies present and potential uses for the Sacramento – San Joaquin Delta, which includes the Old River at the point of discharge. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Old River are as follows:

Table F-3. Basin Plan Beneficial Uses

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

Discharge Point	Receiving Water Name	Beneficial Use(s)
--	Groundwater	Existing: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

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

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

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

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

ii. Elevated temperature waste discharges either individually or combined 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.

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.

Requirements of this Order implement the Thermal Plan.

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

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

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

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

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 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. **Human Right to Water Act.** 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 (MCLs) designed to protect human health and ensure that water is safe for domestic use.

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

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

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

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

9. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Discharger has submitted a Notice of Intent (NOI) and been approved for coverage under the State Water Board's Industrial Storm water General Order. Therefore, this Order does not regulate storm water.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 U.S. EPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments (WQLSs). The Basin Plan references this list of WQLSs, which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The listing for the central portion of the Sacramento-San Joaquin Delta includes chlorpyrifos, DDT, diazinon, Group A pesticides, invasive species, mercury, and unknown toxicity.

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

Table F-4. 303 (d) List for the Sacramento-San Joaquin Delta (Central Portion)

Pollutant	Potential Sources	TMDL Completion[1]
Chlorpyrifos	Urban runoff/storm sewers and agricultural return flows	10 October 2007
DDT	Agriculture	(2011)
Diazinon	Agriculture, urban runoff/storm sewers	10 October 2007
Group A Pesticides	Agriculture	(2011)
Invasive Species	Unknown	(2019)
Mercury	Resource Extraction	20 October 2011
Unknown Toxicity	Unknown	(2019)

[1] Dates in parenthesis are proposed TMDL dates. The proposed completion dates for DDT and Group A Pesticides will be updated on next 303(d) listing.

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

E. Other Plans, Policies and Regulations

1. **Title 27.** The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

   a. The waste consists primarily of domestic sewage and treated effluent;

   b. The waste discharge requirements are consistent with water quality objectives; and

   The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state*

narrative criteria for water quality." Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits*."

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "Policy for Application of Water Quality Objectives", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) 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 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

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

A. Discharge Prohibitions

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

2. **Prohibition III.B (No bypasses or overflow of wastes, except under the conditions at 40 CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations,

40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

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

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

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 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 POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the U.S. EPA Administrator.

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

2. Applicable Technology-Based Effluent Limitations

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

b. **Flow.** Currently, the Facility is designed to provide a secondary level of treatment for up to a design flow of 2.1 MGD. Therefore, this Order contains an average dry weather discharge flow effluent limitation of 2.1 MGD. The Discharger is planning an upgrade and expansion project that would increase the treatment capacity from 2.1 MGD to 2.35 MGD. Upon compliance with Provision VI.C.6.b of this Order, this Order contains an average dry weather discharge flow effluent limitation of 2.35 MGD.

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

Summary of Technology-based Effluent Limitations
Discharge Point 001

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	2.1[1]	--	--	--	--
		2.35[2]	--	--	--	--
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)[3]	mg/L	30	45	--	--	--
	lbs/day[4]	530	790	--	--	--
	lbs/day[5]	590	880	--	--	--
pH[3]	standard units	--	--	--	6.5	8.5
Total Suspended Solids[3]	mg/L	30	45	--	--	--
	lbs/day[4]	530	790	--	--	--
	lbs/day[5]	590	880	--	--	--

1 Effective until the Discharger demonstrates compliance with Special Provision VI.C.6.b of this Order, the average dry weather flow shall not exceed 2.1 MGD.
2 Effective upon compliance with Special Provision VI.C.6.b of this Order, the average dry weather flow shall not exceed 2.35 MGD.
3 Note that more stringent WQBELs for BOD_5, pH, and TSS are applicable and are established as final effluent limitations in this Order (see section IV.C.3.b of this Fact Sheet).
4 Based on an average dry weather flow of 2.1 MGD.
5 Based on an average dry weather flow of 2.35 MGD.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in section IV.C.3.b 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, WQBELs must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

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

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

b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from January 2009 through December 2012, which includes effluent and ambient background data submitted in SMRs and the ROWD.

c. **Assimilative Capacity/Mixing Zone**

i. **Receiving Water Characteristics.** The Facility discharges to the Old River within the tidal estuary of the Delta. The Old River in the vicinity of the discharge is influenced by natural tidal cycles and Delta water exports. The allowed mixing zone is 105 feet wide, 13.5 feet deep, and 5 feet in longitudinal diameter.

ii. **Regulatory Guidance for Dilution Credits and Mixing Zones.** The Discharger has requested mixing zones and dilution credits for compliance with aquatic life water quality criteria. The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. The CWA directs the states to adopt water quality standards to protect the quality of its waters. 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 CFR 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 TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board. T**he allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.** The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board*." [emphasis added]

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

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

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

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

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

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

iii. **Dilution/Mixing Zone Study Results.** Order R5-2003-0067 required the Discharger to conduct a study to verify that the diffuser achieved the dilution levels it was designed to achieve, confirm that the Old River has sufficient assimilative capacity for the constituents of concern, examine flow reversals in the receiving water, and evaluate conditions during the 10-year, worst-case, low-flow condition within the receiving water. Flow Science conducted a dye study on 6 and 7 December 2005 and conducted diffuser modeling using the Visual Plumes dilution model to determine assimilative capacity of the receiving water for the discharge and initial dilution of the effluent.

The dye study was conducted on those dates due to the results of flow modeling done using the Fischer Delta Model. The dye study was scheduled for a time when the river would be bi-directional and when slack tides would be most likely to occur. Data collected during the study were used to verify model predictions of plume behavior. Prior to the study, a tide/velocity gauge was installed approximately 100 meters south of the diffuser. On the first day of the dye study, a mixture of fluorescent dye and a conservative tracer (lithium, as lithium chloride) were added to the effluent stream. The resulting plume was measured by a boat mounted fluorometer. Periodic grab samples were taken to measure the lithium chloride concentration. On the second day of testing, a fluorescent dye was added to the effluent. The sampling boat stayed near the diffuser during this test to evaluate diffuser performance.

Field measurements demonstrated the effluent was diluted rapidly after discharge. Measurements of the lithium chloride concentrations were generally consistent with the fluorescent measurements.

The results indicate that for the 10-year worst case concentration of effluent, the Old River provides a dilution of 13.2:1 for the acute condition and a dilution of 23:1 for the chronic condition. Assumed conditions for the worst-case scenario included an effluent flow rate of 3.0 MGD, zero river velocity, and low tide. The acute and chronic dilution factors above were utilized in determining effluent limitations for pollutants with reasonable potential. The results of the studies and modeling confirm the mixing zone are protective and that performance is greater than estimated in the initial mixing zone study (see Order R5-2003-0067 for a description of the Zone of Initial Dilution and Assimilative Capacity Analysis).

Based on the study results, the following dilution credits were allowed in Order R5-2008-0179-01 and are retained in this Order:

Table F-6. Summary of Mixing Zones

Criteria	Dilution Credit	Width	Length[1]
Acute aquatic life	13.2:1	105 ft	5 ft
Chronic aquatic life	23:1	105 ft	5 ft

[1] Longitudinal diameter

iv. **Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria.** U.S. EPA Region VIII, in its "EPA Region VIII Mixing Zones and Dilution Policy", recommends no dilution for acute aquatic life criteria, stating the following, "*In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone*." The Discharger has requested acute and chronic mixing zones for compliance with acute and chronic water quality criteria. Based on the mixing zone study, the requested acute and chronic aquatic life mixing zones are less than 105 feet wide and extends less than 5 feet upstream and downstream of the diffuser.

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

(a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*." The Old River is approximately 400 feet wide, bank to bank, at the diffuser. The mixing zone is very small relative to the large size or the receiving water (approximately 25% of the river width, only 105 feet wide by 5 feet in length). The mixing zones do not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. This Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(c) *Shall not restrict the passage of aquatic life* – The acute and chronic mixing zones are very small relative to the large size or the receiving water and constitute approximately 25% of the river width; therefore, there is an adequate zone of passage for aquatic life in the Old River.

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

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires end-of-pipe limitations for individual constituents and discharge prohibitions to prevent these conditions from occurring, which will ensure continued compliance with these mixing zone requirements. With these requirements the acute and chronic mixing zones will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

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

(g) *Shall not be allowed at or near any drinking water intake* – The acute and chronic mixing zones are small and do not impact any drinking water intakes. The nearest drinking water intake is a Contra Costa Water District Old River intake located approximately 500 feet upstream, which is outside the mixing zones.

The 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 the EPA's *Water Quality Standards Handbook, 2d Edition* (updated July 2007), Section 5.1, and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

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

(a) **Copper.** The receiving water contains assimilative capacity for copper and acute and chronic mixing zones for copper meet the mixing zone requirements of the SIP. The WQBELs for copper based on acute and chronic dilution credits of 13.2:1 and 23:1, respectively, summarized in Table F-7, below. 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*." As shown in Table F-7, below, based on historic monitoring data the Facility would be unable to achieve more stringent effluent limitations calculated based on Facility performance. Therefore, the mixing zones for copper are considered as small as practicable, and fully meet the requirements of the SIP.

(b) **Ammonia.** The acute and chronic criteria for ammonia were calculated using USEPA's 2013 National Ambient Water Quality Criteria for ammonia with the assumption that freshwater mussels are present. Using pH and temperature data for the upstream receiving water results in a chronic (30-day average) criterion of 0.26 mg/L (as N). The maximum observed receiving water ammonia concentration is 0.4 mg/L (as N). Therefore, the receiving water does not contain assimilative capacity for ammonia and a mixing zone cannot be allowed for ammonia.

(c) **Chronic Whole Effluent Toxicity.** As discussed above, a mixing zone for chronic toxicity meets the requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and Section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." Based on the Discharger's mixing zone studies, the chronic mixing zone extends 5 feet upstream and downstream. Order R5-2008-0179-01 allowed a chronic whole effluent toxicity monitoring

trigger of 10 TUc, which allows for a dilution credit of 10:1. This Order retains the chronic WET numeric trigger of 10 TUc.

(d) **Nitrate Plus Nitrite.** The Discharger requested a mixing zone for nitrate plus nitrite for compliance with the Department of Public Health (DPH) Primary MCL implementing the Basin Plan's narrative chemical constituent objective for the protection of the MUN beneficial use. However, the discharge of nitrate may also impact aquatic life beneficial uses. Excessive nitrates in drinking water pose a human health concern, particularly for human fetuses and infants (Primary MCL protects human health). Excessive nitrogen in the form of nitrates can also contribute to excessive algal growth and change the ecology of a waterbody[1], which has impacts to aquatic life and municipal uses. Consequently, for nutrients, the most stringent water quality objectives are the Basin Plan's narrative biostimulatory substances objective and narrative taste and odor objective.

The Central Valley Water Board is concerned with the effects of the discharge of nutrients, including nitrate and nitrite, on biologically sensitive aquatic resources and critical habitats, as are present in the Delta, and the impact of nutrients on the use of the water for municipal uses. The recent decline in pelagic fishes in the Delta is referred to as the Pelagic Organism Decline (POD). The POD refers to the decline in indices representing the abundance of delta smelt, longfin smelt, striped bass, and threadfin shad, since approximately 2000. *Multiple stressors may be leading to POD, including top-down effects (e.g., water diversion, predation), bottom-up effects (e.g., food availability and quality), and the effects of changes in physical and chemical fish habitat (e.g., water quality, contaminants, disease, toxic effects of toxic algal blooms) (Sommer et al. 2007).*[2]

The discharge likely increases nitrate concentrations at the State Water Project and Central Valley Project Pumping Plants as the entire discharge flows toward the pumps. Increased nutrient loads can create excessive algal growth in the Delta, resulting in impacts to municipal drinking water supplies.[3] Increased algal growth can result in increased concentrations of total organic carbon (TOC) that negatively impacts municipal drinking water suppliers, because it may result in the creation of harmful byproducts during chlorination. High nutrient levels in source water can also impact water conveyance systems and treatment plants, because algae can clog filters and reduce the efficiency of filtration, and algae and aquatic weeds can clog conveyance systems. In addition, some species of bluegreen algae are associated with the production of compounds such as geosmin and 2-methylisoborneol (MIB) that impart objectionable odors and tastes to waters, even at very low concentrations. These impacts are

[1] Glibert, P.M. 2010. Long-term change in nutrient loading and stoichiometry and their relationships with changes in food web and dominant pelagic fish species in the San Francisco Estuary, California. Reviews in Fisheries Science. 18(2):211-232
Glibert, P.M., et al. 2011, Ecological stoichiometry, biogeochemical cycling, invasive species, and aquatic food webs; San Francisco Estuary and comparative systems. Reviews in Fisheries Science, 19(4):358-417

[2] Sommer, T.R., et al. 2007. The collapse of pelagic fishes in the upper San Francisco Estuary. Reviews in Fisheries Science, 32:270-277

[3] Heidel, K., et al. 2006. Conceptual Model for Nutrients in the Central Valley and Sacramento-San Joaquin Delta

occurring, therefore, there is no assimilative capacity for nutrients and any increased nutrient loading contributes to the impairment of the beneficial uses. For the reasons discussed above, the requested mixing zone for nitrate plus nitrite is denied.

Table F-7. Summary of WQBELs Based on Full Dilution Credits vs Facility Performance

Parameter	Units	MEC[1]	Mean	Standard Deviation	Facility Performance[2]	WQBELs with Full Dilution	
						Average Monthly	Maximum Daily
Copper, Total Recoverable	µg/L	45	28	6.97	52	45	63

[1] MEC = maximum effluent concentration
[2] Facility performance calculated using Table 3-1 of USEPA's TSD.

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

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

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

(c) In accordance with Section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls. The mixing zone is small (approximately 5 feet upstream and downstream of the discharge) relative to the large size of the receiving water (the Old River is 400 feet wide at the point of discharge), does not impact a drinking water intake, and does not overlap a mixing zone from a different outfall.

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

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

effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

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

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

(h) The mixing zone studies indicate the maximum allowed dilution factors for acute and chronic aquatic toxicity criteria to be 13.2:1 and 23:1, respectively. Section 1.4.2.2.B of the SIP, in part states, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*" The Central Valley Water Board has determined these dilution factors are not needed or necessary for the Discharger to achieve compliance with this Order, except for copper, as described above.

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

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

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

The Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing 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.

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

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

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[3]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. **Conducting the Reasonable Potential Analysis (RPA).** The SIP in Section 1.3 states, "*The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective*." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure

[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. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

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

requires the comparison of the maximum effluent concentration (MEC) and maximum ambient background concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

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

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

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

A 2006 Study[2] developed procedures for calculating the effluent concentration allowance (ECA)[3] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent.

[1] The pollutant must also be detected in the effluent.
[2] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[1], is as follows:

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

Where:
H = hardness (as $CaCO_3$)[2]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

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

ECA = C (when C ≤ B)[3] (Equation 2)

Where:
C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)
B = the ambient background concentration

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

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[4]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition

[1] 40 CFR § 131.38(b)(2).
[2] For this discussion, all hardness values are in mg/L as $CaCO_3$.
[3] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e., C ≤ B)
[4] 2006 Study, p. 5700

(i.e., no receiving water flow)[1]. Consequently, for Concave Down Metals where no dilution credit has been granted, the CTR criteria have been calculated using the downstream ambient hardness under this condition. For Concave Down Metals where a dilution credit has been granted (e.g., copper), the criteria have been calculated using the hardness at the edge of the allocated mixing zone.

Concave Down Metals – No Dilution Credit. The effluent hardness ranged from 280 mg/L to 305 mg/L, based on five samples collected between January 2009 and December 2012. However, based on 105 data points collected during the previous permit term, Order R5-2008-0179-01 used an effluent hardness of 204 mg/L for calculating criteria for the hardness-based metals. Due to the limited amount of data collected during the term of Order R5-2008-0179-01, the Central Valley Water Board concludes that an a minimum effluent hardness of 204 mg/L continues to be representative of the effluent. The upstream receiving water hardness varied from 39 mg/L to 140 mg/L, based on 87 samples collected between January 2009 and December 2012. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 204 mg/L. As demonstrated in the example shown in Table F-8, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for zinc assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water <u>always</u> at the lowest observed upstream receiving water hardness (i.e., 39 mg/L)
- Upstream receiving water zinc concentration <u>always</u> at the CTR criteria (i.e., no assimilative capacity).

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

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

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

In this example, for zinc, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient zinc concentration is in compliance with the CTR criteria[2]. [When no dilution credit(s) are allowed for a parameter.]

[1] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

[2] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-8 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in

Table F-8. Zinc ECA Evaluation

Lowest Observed Effluent Hardness					**204 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**39 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Zinc Concentration					**54 µg/L[1]**
Zinc $ECA_{chronic}$[2]					**219 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Zinc[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	41	56	56	**Yes**
	5%	47	63	62	**Yes**
	15%	64	82	79	**Yes**
	25%	80	99	95	**Yes**
	50%	122	141	137	**Yes**
Low Flow	75%	163	181	178	**Yes**
	100%	204	219	219	**Yes**

1 Highest assumed upstream receiving water zinc concentration calculated using Equation 1 for chronic criterion at a hardness of 39 mg/L.
2 ECA calculated using Equation 1 for chronic criterion at a hardness of 204 mg/L.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient zinc concentration is the mixture of the receiving water and effluent zinc concentrations at the applicable effluent fraction using Equation 3.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Concave Down Metals - Dilution Credit Allowed. In this site-specific case and as discussed in Section IV.C.2 c, above, dilution credits for copper have been allowed in the calculation of WQBELs for this hardness-dependent criteria parameter. As discussed in Section IV.C.2.c, above, the allowed copper dilution credit for chronic aquatic life criteria is 23:1, which represents an effluent fraction of 4.2%. This value defines the points in the receiving water (i.e., edge of mixing zone) that must be in compliance with aquatic life criteria. When the effluent and receiving water are at their respective minimum observed hardness values (i.e., 204 mg/L and 39 mg/L as $CaCO_3$, respectively), and the effluent fraction is 4.2%, the mixed hardness is 46 mg/L (as $CaCO_3$). Therefore, a hardness of 46 mg/L (as $CaCO_3$) has been used in this Order for calculating hardness-dependent copper chronic criteria. Using the ambient hardness to calculate the hardness-dependent metals criteria is consistent with the CTR and the SIP.

Table F-9, below, is an example demonstrating that protective effluent limitations result when using this approach for determining the appropriate hardness. In this example the mixed receiving water copper concentration does not exceed the mixed CTR criteria for copper.

compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

Table F-9. Copper ECA Evaluation – Dilution Credit Allowed

Minimum Ambient Background Hardness	**39 mg/L (as $CaCO_3$)**
Minimum Effluent Hardness	**204 mg/L (as $CaCO_3$)**
Chronic Aquatic Life Dilution Credit	**23:1**
Maximum Ambient Background Copper Concentration	**2.9 µg/L**
Chronic ECA for Copper[1]	**48**

Effluent Fraction[5]	**Mixed Downstream Ambient Concentration**			
	Hardness[2] (mg/L)	**CTR Criteria[3] (µg/L)**	**Copper[4] (µg/L)**	**Complies with CTR Criteria**
1%	41	4.3	3.4	**Yes**
2%	42	4.5	3.8	**Yes**
3%	44	4.6	4.3	**Yes**
4%	46	4.8	4.7	**Yes**
4.2%	46	4.8	4.8	**Yes**

1 ECA calculated per Section 1.4 of the SIP.
2 Mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardness values (i.e., 39 mg/L and 204 mg/L for the receiving water and effluent, respectively).
3 Mixed downstream ambient criteria is the CTR chronic criterion calculated using the mixed hardness.
4 Mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentration using the maximum background copper concentration (i.e., 2.9 µg/L) and the effluent copper concentration at the ECA.
5 Table shows effluent fractions ranging from 1% to 4.2%, to show conditions outside the approved mixing zone for copper.

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

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-10).

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

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

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-10, below. As previously mentioned, the lowest effluent hardness is 204 mg/L, while the upstream receiving water hardness ranged from 39 mg/L to 140 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 39 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-10, for lead.

Table F-10. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**204 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**39 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**0.96 µg/L[1]**
Lead $ECA_{chronic}$[2]					**6.1 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	41	1.0	1.0	**Yes**
	5%	47	1.2	1.2	**Yes**
	15%	64	1.8	1.7	**Yes**
	25%	80	2.4	2.3	**Yes**
	50%	122	4.1	3.5	**Yes**
	75%	163	5.9	4.8	**Yes**
Low Flow	100%	204	7.9	6.1	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 39 mg/L.
2 ECA calculated using Equation 4 for chronic criteria.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-11 lists all the CTR hardness-dependent metals and the associated ECAs used in this Order.

Table F-11. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)[1]	
	acute	chronic
Copper[2]	66	48
Chromium III	3,100	370
Cadmium	9.0	4.3
Lead	160	6.1
Nickel	860	95
Silver	6.7	--
Zinc	220	220

[1] Metal criteria rounded to two significant figures in accordance with the CTR.
[2] Copper dilution credit granted.

3. Determining the Need for WQBELs

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

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

i. **Aluminum**

Aluminum is the third most abundant element in the earth's crust and is ubiquitous in both soils and aquatic sediments. When mobilized in surface waters, aluminum has been shown to be toxic to various fish species. However, the potential for aluminum toxicity in surface waters is directly related to the chemical form of aluminum present, and the chemical form is highly dependent on water quality characteristics that ultimately determine the mechanism of aluminum toxicity. Surface water characteristics, including pH, temperature, colloidal material, fluoride and sulfate concentrations, and total organic carbon, all influence aluminum speciation and its subsequent bioavailability to aquatic life. Calcium [hardness] concentrations in surface water may also reduce aluminum toxicity by competing with monomeric aluminum (Al^{3+}) binding to negatively charged fish gills.

(a) **WQO.** State of California Department of Public Health (DPH) has established Secondary Maximum Contaminant Levels (MCLs) to assist public drinking water systems in managing their drinking water for aesthetic conditions such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L for protection of the MUN beneficial use. Title 22 requires compliance with Secondary MCLs on an annual average basis.

The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters as part of section 131.38 Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBEL's in the Central

Valley Region's NPDES permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective*." Relevant information includes, but is not limited to (1) USEPA Ambient Water Quality Criteria (NAWQC) and subsequent Correction, (2) site-specific conditions of Old River, the receiving water, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).)

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

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

(2) Chronic toxicity effects on 60-day old brook trout were evaluated in circumneutral pH waters (6.5-6.9 pH) in five cells at various aluminum doses (4, 57, 88, 169, and 350 µg/L). Chronic evaluation started upon hatching of eyed eggs of brook trout, and their weight and length were measure after 45 days and 60 days. The 60-day old brook trout showed 24% weight loss at 169 µg/L of aluminum and 4% weight loss at 88 µg/L of aluminum, which is the basis for USEPA's chronic criteria. Though this test study shows chronic toxic effects of 4% reduction in weight after exposure for 60-days, the chronic criterion is based on 4-day exposure; so again, the applicability of the NAWQC chronic criterion of 87 µg/L is questionable.

Site-specific Conditions. USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms when the pH and hardness conditions of the receiving water are not similar to that of the test conditions.[1] Effluent and Old River

[1] "The value of 87 micro-g/L is based on a toxicity test with striped bass in water with pH = 6.5-6.6 and hardness < 10 mg/L. Date in [a 1994 Study] indicate that aluminum is substantially less toxic at higher pH and hardness,

monitoring data indicate that the pH and hardness values are not similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as toxic in Old River as in the previously described toxicity tests. The pH of Old River, the receiving water, ranged from 6.59 to 8.72 with a median of 7.68 based on 96 monitoring results obtained between 7 January 2009 and 19 December 2012. These water conditions typically are circumneutral pH where aluminum is predominately in the form of $Al(OH)_3$ and non-toxic to aquatic life. The hardness of Old River ranged from 39 to 140 mg/L, based on 87 samples from 4 February 2009 to 5 December 2012, which is above the conditions, and thus less toxic, than the tests used to develop the chronic criterion.

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Receiving Water
pH	standard units	6.0 – 6.5	7.1 – 8.2	6.59 – 8.72
Hardness, Total (as $CaCO_3$)	mg/L	12	204 – 305	39 – 140
Aluminum, Total Recoverable	µg/L	87.2 - 390	21.9 – 230	No Data

Local Environmental Conditions and Studies. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of Old River are similar, as shown in the table below, and thus the results of these site-specific aluminum toxicity tests are relevant and appropriate for Old River. As shown in the following table, all EC_{50}[1] toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in these surface waters and in Old River, is less toxic (or less reactive) to aquatic species then demonstrated in the toxicity tests that USEPA used for the basis of establishing the chronic criterion of 87 µg/L. This new information, and review of the toxicity tests USEPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to Old River.

Central Valley Region Site-Specific Aluminum Toxicity Data

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
Auburn	*Ceriodaphnia dubia*	Effluent	99	>5270	7.44	>19.3
	" "	Surface Water	16	>5160	7.44	>12.4
Manteca	" "	Surface Water/Effluent	124	>8800	9.14	N/C
	" "	Effluent	117	>8700	7.21	>27.8
	" "	Surface Water	57	7823	7.58	25.0

but the effects of pH and hardness are not well quantified at this time." USEPA 1999 NAWQC Correction, Footnote L

[1] The effect concentration is a point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC_{50} is a point estimate of the toxicant concentration that would cause an observable adverse effect in 50 percent of the test organisms. The EC_{50} is used in toxicity testing to determine the appropriate chronic criterion.

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

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

The Discharger has not conducted a toxicity test for aluminum; however, the City of Manteca conducted toxicity tests in the San Joaquin River. As shown, the test water quality characteristics of the San Joaquin River near Manteca are similar for pH and hardness in Receiving Water, with the hardness ranging from 57 to 104 mg/L as $CaCO_3$ in comparison to the hardness of the Old River near the discharge that averages 83 mg/L as $CaCO_3$. Thus, results of the site-specific study conducted on the San Joaquin River near Manteca are representative of Old River near the discharge. Therefore, the City of Manteca aluminum toxicity test study is relevant for use in determining the specific numerical criteria to be used in determining compliance with the Basin Plan's narrative toxicity objective. The City of Manteca aluminum toxicity study resulted in a minimum site-specific aluminum objective of 7,823 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for Old River near the discharge.

Applicable WQOs. This Order implements the Secondary MCL of 200 µg/L as an annual average for the protection of MUN and implements the Basin Plan's narrative toxicity objective for the protection of aquatic life using an acute (1-hour) criterion and chronic (4-day) criterion of 750 µg/L based on USEPA's NAWQC and the discussion above.

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

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

The maximum observed annual average effluent aluminum concentration was 78 µg/L based on 47 samples collected between January 2009 and December 2012. Effluent aluminum is consistently below the Secondary MCL and the NAWQC acute criterion. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of aluminum. Since the discharge does not demonstrate reasonable potential, the effluent limitation for aluminum has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

ii. **Diazinon and Chlorpyrifos**

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

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

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

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

Where:

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

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

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

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

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

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

(b) **RPA Results.** Effluent and receiving water monitoring data for diazinon and chlorpyrifos is not available. However, since these pesticides have been banned for public use, they are not expected to be present in the effluent. The discharge does not have reasonable potential, but due to the TMDL for diazinon and chlorpyrifos in the Delta, WQBELs for these constituents are required. The TMDL waste load allocation applies to all NPDES dischargers to Delta waterways and will serve as the basis for WQBELs at Discharge Point 001.

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

(1) Average Monthly Effluent Limitation (AMEL)

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

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

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

(2) Maximum Daily Effluent Limitation (MDEL)

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

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

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

(d) **Plant Performance and Attainability.** Monitoring data is not available to determine if the Discharger can consistently comply with the new effluent limitations for diazinon and chlorpyrifos. However, since these pesticides have been banned for public use, they are not expected to be present in the influent to the Facility. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. **Iron**

(a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for iron is 300 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply. The Basin Plan contains a site-specific numeric objective for the Delta of 300 µg/L (maximum concentration) for iron, expressed as dissolved metal, based on the Secondary MCL. Order R5-2008-0179-01 included an annual average effluent limitation of 300 µg/L for iron based on the site-specific objective contained in the Basin Plan.

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

The maximum observed annual average effluent concentration for iron was 72 µg/L based on 49 samples collected between January 2009 and December 2012. Effluent iron is consistently below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of iron. Since the discharge does not demonstrate reasonable potential, the effluent limitation for iron has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iv. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs for electrical conductivity, total dissolved solids, sulfate, and chloride. In addition, the State Water Board prescribed numeric chloride and electrical conductivity standards to protect AGR, IND, and MUN uses at several locations in the Delta, including in the West Canal at Mouth of Clifton Court Forebay (the entrance to the State Water Project canal). This location is south of the discharge location along Old River, which is the “downstream” direction of Old River during irrigation and low flow seasons in the Delta. The salinity objective for West Canal is 1,000 µmhos/cm year-round for electrical conductivity and 250 mg/L for chloride. The 2006 update of the Bay-Delta Plan clarified that the numeric objectives are not just applicable at the compliance monitoring locations, but “*unless otherwise indicated, water quality objectives cited for a general area, such as for the southern Delta, are applicable for all locations in that general area and compliance locations will be used to determine compliance with the cited objectives*.” The West Canal compliance location is in the general area of the discharge, and the compliance location is “downstream” of the discharge during critical Delta flow conditions. Therefore, the numeric electrical conductivity and chloride objectives for the West Canal compliance location are applicable to the receiving water. In addition, U.S. EPA has developed NAWQC for chloride for the protection of freshwater aquatic life.

Table F-12. Salinity Water Quality Criteria/Objectives

Parameter	Secondary MCL[1]	Bay-Delta Plan[2]	U.S. EPA NAWQC	Effluent	
				Average[3]	Maximum
EC (µmhos/cm)	900, 1600, 2200	1,000	N/A	2,192	2,480
TDS (mg/L)	500, 1000, 1500	N/A	N/A	1,270	1,400
Sulfate (mg/L)	250, 500, 600	N/A	N/A	--	--
Chloride (mg/L)	250, 500, 600	250	860 1-hr 230 4-day	381	468

[1] The Secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.
[2] West Canal at Mouth of Clifton Court Forebay (the entrance to the State Water Project).
[3] Maximum calendar annual average.

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

The Bay-Delta Plan contains a site-specific chloride objective of 250 mg/L as a maximum mean daily value, applicable between 1 October and 30 September, for the West Canal at Mouth of Clifton Court Forebay (the entrance to the State Water Project) to protect MUN and IND uses.

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

The Bay-Delta Plan contains a site-specific electrical conductivity objective of 1,000 µmhos/cm as a maximum monthly average of mean daily values, applicable between 1 October and 30 September, for the West Canal at Mouth of Clifton Court Forebay (the entrance to the State Water Project) to protect AGR uses.

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

(4) **Total Dissolved Solids.** The Secondary MCL for total dissolved solids is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum.

(b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chloride, electrical conductivity, and total dissolved solids 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 its judgment in determining the appropriate method for conducting the RPA for these non-priority pollutant constituents. For conducting the RPA, the U.S. EPA recommends using a 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. This U.S. EPA recommended approach has been used for chloride, electrical conductivity, and total dissolved solids. The critical downstream receiving water concentration is calculated using equation 2 below:

$$C_r = \frac{Q_s C_s + Q_d C_d}{Q_s + Q_d} \text{ (Equation 2)}$$

Where:

Q_s = Critical stream flow (harmonic mean 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

C_r = Critical downstream receiving water pollutant concentration

Although the objectives for chloride and electrical conductivity are based on protection of AGR and MUN uses, the averaging periods for the objectives have a short-term duration (i.e., 1-day average for chloride and 30-day average for electrical conductivity). Therefore, a critical stream flow (Qs) of 13.2 cfs was used for chloride and a critical stream flow of 70 cfs was used for electrical conductivity. A critical effluent flow (Qd) of 1 cfs was used for the RPA for chloride and electrical conductivity, which correspond to a dilution credit of 13.2:1 and 70:1, respectively. The Secondary MCL for total dissolved solids is a long-term objective. Therefore, a critical stream flow (Qs) of 700 cfs was used for the RPA for total dissolved solids, which represents the harmonic mean flow. The critical effluent flow (Qd) of 3.25 cfs (2.1 MGD) was used for total dissolved solids, which is the permitted 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 effluent concentration (i.e., Table 3-1 of the TSD using the 99% probability basis and 99% confidence level).

(1) **Chloride.** Chloride concentrations in the effluent ranged from 250 mg/L to 468 mg/L, with an average of 367 mg/L, based on 96 samples collected between January 2009 and December 2012. Based on this data, the projected maximum effluent chloride concentration is 500 mg/L[2]. Background receiving water chloride concentrations ranged from 12 mg/L to 175 mg/L, with an average of 67 mg/L based on 103 samples collected between January 2009 and December 2012. Thus, 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

[1] U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010)
[2] Projected maximum effluent concentration determined using TSD Table 3-1 (99% probability basis and 99% confidence level).

large dilution and assimilative capacity in the receiving water, the small increase in chloride caused by the discharge does not result in a reasonable potential to cause or contribute to an exceedance of the objectives for chloride in the receiving water.

Q_s = 13.2 cfs

Q_d = 1 cfs

C_s = 175 mg/L

C_d = 500 mg/L

$$C_r = \frac{(13.2\ cfs \times 175\ mg/L\ ) + (1\ cfs \times 500\ mg/L\ )}{(23\ cfs + 1\ cfs)} = 189\ mg/L$$

The critical downstream receiving water chloride concentration, C_r, is 189 mg/L, which does not exceed the Bay-Delta objective of 250 mg/L. Therefore, the discharge does not have reasonable potential for chloride.

(2) **Electrical Conductivity.** Electrical conductivity concentrations in the effluent ranged from 1,800 µmhos/cm to 2,480 µmhos/cm, with an average of 2,138 µmhos/cm, based on 97 samples collected between January 2009 and December 2012. Based on this data, the projected maximum effluent electrical conductivity concentration is 2,600 µmhos/cm. Background receiving water electrical conductivity concentrations ranged from 11.5 µmhos/cm to 764 µmhos/cm, with an average of 398 µmhos/cm based on 104 samples collected between January 2009 and December 2012. Thus, 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.

Q_s = 70 cfs

Q_d = 1 cfs

C_s = 764 µmhos/cm

C_d = 2,600 µmhos/cm

$$C_r = \frac{(70\ cfs \times 764\ \mu mhos/cm\ ) + (1\ cfs \times 2{,}600\ \mu mhos/cm\ )}{(70\ cfs + 1\ cfs)} = 789\ \mu mhos/cm$$

The critical downstream receiving water electrical conductivity concentration, C_r, is 789 µmhos/cm, which does not exceed the Bay-Delta objective of 1,000 µmhos/cm. Therefore, the discharge does not have reasonable potential for electrical conductivity.

(3) **Sulfate.** Effluent and upstream receiving water monitoring data for sulfate is not available.

(4) **Total Dissolved Solids.** Total dissolved solids concentrations in the effluent ranged from 1,100 mg/L to 1,400 mg/L, with an average of

1,240 mg/L, based on 97 samples collected between January 2009 and December 2012. Based on this data, the projected maximum effluent total dissolved solids concentration is 1,500 mg/L. Background receiving water total dissolved solids concentrations ranged from 79 mg/L to 421 mg/L, with an average of 218 mg/L based on 103 samples collected between January 2009 and December 2012. Thus, 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.

Q_s = 700 cfs

Q_d = 3.25 cfs

C_s = 421 mg/L

C_d = 1,500 mg/L

$$C_r = \frac{(700\ cfs \times 421\ mg/L\ ) + (3.25\ cfs \times 1{,}500\ mg/L\ )}{(700\ cfs + 3.25\ cfs)} = 426\ mg/L$$

The critical downstream receiving water total dissolved solids concentration, C_r, is 426 mg/L, which does not exceed the Secondary MCL of 500 mg/L. Therefore, the discharge does not have reasonable potential for total dissolved solids.

(c) **WQBELs.** The discharge does not have reasonable potential to cause or contribute to an instream exceedance of the applicable water quality objectives for salinity. However, due to concerns with salinity in the Delta, this Order includes a performance-based effluent limit for electrical conductivity to ensure the discharge of salinity does not increase. Consistent with Order R5-2008-0179-01, this Order includes an annual average performance-based effluent limitation for electrical conductivity of 2,100 µmhos/cm. This Order also requires the Discharger to continue to implement its Pollution Prevention Plan (PPP) for salinity.

(d) **Plant Performance and Attainability.** The effluent exceeded the annual average effluent limitation in 2010 (2,192 µmhos/cm), 2011 (2,167 µmhos/cm), and 2012 (2,173 µmhos/cm). The Discharger evaluated the increase in effluent salinity and found that the salinity in one of its groundwater supply wells had been increasing. The Discharger set the well at a lower priority, so it is now only used during periods of high demand. The Discharger is currently constructing a new groundwater supply well to replace the well. The Discharger believes this will lower the effluent electrical conductivity sufficiently to meet the annual average effluent limitation. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

b. **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, copper, methylmercury, nitrate plus nitrite, pH, temperature, total coliform organisms, and TSS. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

(a) **WQO.** In August 2013, U.S. EPA published new NAWQC for the protection of freshwater aquatic life for total ammonia[1]. The 2013 NAWQC for ammonia recommends acute (1-hour average; criteria maximum concentration or CMC) and chronic (30-day average; criteria continuous concentration or CCC) standards that vary 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 NAWQC for ammonia takes into account data for several sensitive freshwater mussel species and non-pulmonate snails that had not previously been tested.

U.S. EPA found that as pH and temperature increased, both the acute and chronic toxicity of ammonia increased for invertebrates. However, U.S. EPA found that only pH significantly influenced acute and chronic ammonia toxicity for fish. Therefore, the 2013 acute NAWQC for ammonia is primarily based on the ammonia effects on species in the genus *Oncorhyncus* (salmonids) at lower temperatures and invertebrates at higher temperatures. However, due to the significant sensitivity unionid mussels have to the chronic toxicity effects of ammonia, the 2013 chronic NAWQC for ammonia is determined primarily by the effects of mussels.

The U.S. NAWQC document states that "*unionid mussel species are not prevalent in some waters, such as the arid west.*" The 2013 ammonia NAWQC also states, "*In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria dataset to better represent the species present at the site."* The 2013 ammonia NAWQC, therefore, includes a recalculation procedure for acute and chronic criteria for waters where mussels are not present. The 2013 ammonia NAWQC also provides criteria for waters where *Oncorhynchus* species are not present and where protection of early life stages of fish genera is unnecessary.

A report by The Nature Conservancy, *Sensitive Freshwater Mussel Surveys in the Pacific Southwest Region: Assessment of Conservation Status* (published August 2010), demonstrates the results of a strategic mussel study and survey conducted during 2008-2009. The study does not contain any survey information for the Old River in the vicinity of the Facility's discharge; however, freshwater mussels have been surveyed in other parts of the Delta. Therefore, criteria for waters where mussels are present were used. Furthermore, because Old River has a beneficial use of cold freshwater habitat (COLD) and the presence of salmonids and

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

early fish life stages in Old River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

As discussed above, the ammonia criteria vary based on pH and temperature. Since the Discharger requested dilution credits and use of assimilative capacity, the criteria were calculated using upstream pH and temperature.

Since end-of-pipe effluent limitations are required, the acute criterion was calculated for each day when paired temperature data and pH were measured using effluent data for temperature and pH. The minimum observed acute criterion based on the paired data was established as the applicable acute criterion, or 1-hour CMC. The most stringent acute criterion was 2.08 mg/L (as N).

A chronic criterion was calculated for each day when paired temperature data and pH were measured using effluentdata for temperature and pH. Rolling 30-day average criteria were calculated from effluent data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The most stringent 30-day CCC was 0.63 mg/L (as N). The 4-day average concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 0.63 mg/L (as N), the 4-day average concentration that should not be exceeded is 1.58 mg/L (as N).

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

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

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" 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 POTWs, U.S. EPA recommends that, "*POTWs should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)

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

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

The maximum observed upstream receiving water ammonia concentration was 0.4 mg/L based on 17 samples collected between January 2003 and December 2004; therefore, the receiving water does not contain assimilative capacity for ammonia. Thus, end-of-pipe effluent limitations must be established for ammonia. This Order contains an AMEL and a MDEL for ammonia of 0.7 mg/L and 2.1 mg/L, (as N) respectively.

(d) **Plant Performance and Attainability.** Based on 211 samples collected between January 2009 and December 2012, the maximum monthly average ammonia concentration was 1.5 mg/L and the maximum concentration was 5.5 mg/L. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance.

The Discharger submitted an infeasibility analysis on 18 March 2014 (revised on 20 March 2014). As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

ii. **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 receiving water and effluent.

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 recoverable).

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 which is the most stringent objective because they have different averaging periods and the CTR criteria vary with hardness. In this situation, the RPA has been conducted considering both the CTR criteria and the Basin Plan site-specific objective.

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

Table F-13. Copper RPA

	CTR Chronic Criteria	CTR Acute Criteria	Site-Specific BP Objective	Maximum Concentration	Reasonable Potential? (Y/N)
Receiving Water	4.2 µg/L[1]	5.8 µg/L[1]	10.4 µg/L	2.9 µg/L[2]	No
Effluent	17 µg/L[3]	27 µg/L[3]	10.4 µg/L	45 µg/L[4]	Yes[5]

Note: All copper concentrations are given as a total recoverable

[1] Based on lowest observed upstream receiving water hardness of 39 mg/L (as $CaCO_3$).

[2] Maximum ambient background receiving water copper concentration based on 13 samples collected between January 2004 and December 2004.

[3] Based on reasonable worst-case downstream hardness as described in section IV.C.2.e of this Fact Sheet.

[4] MEC for copper based on 99 samples collected between January 2009 and December 2012.

[5] Per Section 1.3, step 4 of the SIP.

Based on the available data, 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 and site-specific Basin Plan objective.

(c) **WQBELs.** The receiving water contains assimilative capacity for copper; therefore, acute and chronic aquatic life dilution credits of 13.2:1 and 23:1, respectively, were allowed in the development of the WQBELs for copper. In accordance with the SIP, the more stringent of the two applicable criteria, the CTR criteria and the Basin Plan objective, was used to determine reasonable potential. The resulting WQBELs that are calculated based on the CTR criteria result in WQBELs more stringent than the Basin Plan objective (see table below).

WQBELs	AMEL	MDEL
CTR Chronic Criterion (Aquatic Life)	45 µg/L	63 µg/L
Basin Plan Objective[1]	--	182 µg/L

[1] Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Table III-1, Copper. Applicable to the Sacramento – San Joaquin Delta.

Therefore, this Order contains a final AMEL and MDEL for copper of 45 µg/L and 63 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Based on 99 samples collected between January 2009 and December 2012, the discharge has been in compliance with the new, more stringent effluent limits. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. **Mercury**

(a) **WQO.** The Basin Plan contains fish tissue objectives for all Delta waterways listed in Appendix 43 of the Basin Plan that states "…*the average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length*." The Delta Mercury Control Program contains aqueous methylmercury waste load allocations that are calculated to achieve these fish tissue objectives. Methylmercury reductions are assigned to dischargers with concentrations of methylmercury greater than 0.06 ng/L (the concentration of methylmercury in water to meet the fish tissue objective). The Facility is allocated 0.37 g/year of methylmercury, as listed in Table IV-7B of the Basin Plan.

The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, in 40 CFR Part 131, 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 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.

(b) **RPA Results.** Section 1.3 of the SIP states, "*The RWQCB shall conduct the analysis in this section for each priority pollutant with an applicable criterion or objective,* ***excluding priority pollutants for which a TMDL has been developed, to determine if a water quality-based effluent limitation is required in the discharger's permit****.*" (emphasis added) Although an RPA is not required, based on the available effluent and receiving water methylmercury data, it appears the discharge is causing or contributing to an exceedance of the concentration of methylmercury in water to meet the site-specific fish tissue objectives in the Basin Plan. The MEC for methylmercury was 0.225 ng/L based on 16 samples collected between January 2009 and October 2013. Upstream receiving water data for methylmercury is not available. The MEC for total mercury was 20.3 ng/L based on 22 samples collected between January 2009 and October 2013. Upstream receiving water data for total mercury is not available.

(c) **WQBELs.** The Basin Plan's Delta Mercury Control Program includes wasteload allocations for POTWs in the Delta, including for the Discharger. This Order contains a final WQBEL for methylmercury based on the wasteload allocation. The total calendar annual methylmercury load shall not exceed 0.37 grams.

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

iv. **Nitrate and Nitrite**

(a) **WQO.** The discharge of nitrate may impact municipal and aquatic life beneficial uses. Excessive nitrates in drinking water pose a human health concern, particularly for human fetuses and infants. Excessive nitrogen in the form of nitrates can also contribute to excessive algal growth and change the ecology of a waterbody, which has impacts to aquatic life and municipal uses.[1] The applicable narrative water quality objectives are as follows:

(1) **Chemical Constituents.** Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. DPH has adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen, which implements the narrative chemical constituents objective for the protection of the MUN beneficial use.

(2) **Biostimulatory Substances.** Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

[1] Glibert, P.M. 2010. Long-term change in nutrient loading and stoichiometry and their relationships with changes in food web and dominant pelagic fish species in the San Francisco Estuary, California. Reviews in Fisheries Science. 18(2):211-232
Glibert, P.M., et al. 2011, Ecological stoichiometry, biogeochemical cycling, invasive species, and aquatic food webs; San Francisco Estuary and comparative systems. Reviews in Fisheries Science, 19(4):358-417

(3) **Taste and Odors.** 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.

USEPA has established CWA section 304(a) criteria for total nitrogen of 0.31 mg/L in its Aggregate Ecoregion I criteria[1] that may be used to interpret the biostimulatory substances and taste and odors narrative objectives. USEPA's nutrient criterion for streams and rivers address cultural eutrophication, which is the adverse effects of excess human-caused nutrient inputs. The criterion was derived to represent surface waters that are minimally impacted by human activities and protective of aquatic life and recreational uses.

(b) **RPA Results.** The maximum effluent nitrate concentration was 28 mg/L, based on 96 samples collected between January 2009 and December 2012. The maximum observed upstream receiving water nitrate concentration was 5.1 mg/L based on eight samples collected between January 2003 and June 2007. Effluent and receiving water data for nitrite is not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL for nitrate plus nitrite.

The discharge of nitrate also has reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative water quality objectives for biostimulatory substances and taste and odors. There is evidence in the record that harmful algal blooms and eutrophication is occurring in the Delta and in Delta exports (Archibald Consulting et al. 2012)[2] (Heidel et al. 2006)[3], therefore, there is no assimilative capacity for nutrients, such as nitrate, and the existing discharge is causing or contributing to exceedances of these water quality objectives.

The discharge of nutrients can cause excessive algal growth in the Delta, which impacts the MUN beneficial use by increasing TOC, reduces water treatment plant efficiency, and causes taste and odor issues. (Heidel et al. 2006) Elevated TOC negatively impacts municipal drinking water suppliers because it can result in the creation of harmful byproducts during chlorination. Drinking water suppliers must remove TOC prior to chlorination if TOC concentrations are too high. High nutrient levels in source water can also impact water conveyance systems and treatment plants, because algae can clog filters and reduce the efficiency of filtration, and algae and aquatic weeds can clog conveyance systems. Finally, some species of bluegreen algae are associated with the production of compounds such as geosmin and 2-MIB that impart objectionable odors and tastes to waters, even at very low concentrations. Taste and odor problems may be resolved with algaecides. But the predominant algaecides are copper-based, which creates solid waste disposal

[1] Ambient Water Quality Criteria Recommendations, Rivers and Streams in Nutrient Ecoregion 1, USEPA December 2001 (EPA 822-B-01-012)

[2] Archibald Consulting et al. 2012. California State Water Project Watershed Sanitary Survey, 2011 Update. Prepared for the State Water Project Contractors Authority and the California Department of Water Resources.

[3] Heidel, K., et al. 2006, Conceptual Model for Nutrients in the Central Valley and Sacramento-San Joaquin Delta,

problems as well as aquatic toxicity issues. Other species of *blue green algae, in particular Anabaena flos-aquae, Microcystis aeruginosa*, and *Aphanizomenon flos-aquae*, produce neurotoxins that are toxic to humans, fish, and wildlife. These species of algae have also been reported in the Delta according to DPH.

(c) **WQBELs.** The Central Valley Water Board is concerned with the effects of the discharge of nutrients, including nitrate and nitrite, on biologically sensitive aquatic resources and critical habitats, as are present in the Sacramento-San Joaquin Delta and the impact of nutrients on the use of the water for municipal uses. The recent decline in pelagic fishes in the Delta is referred to as the POD. *Multiple stressors may be leading to POD, including top-down effects (e.g., water diversion, predation), bottom-up effects (e.g., food availability and quality), and the effects of changes in physical and chemical fish habitat (e.g., water quality, contaminants, disease, toxic effects of toxic algal blooms) (Sommer et al. 2007)*. The current science is not certain on the precise factors causing the POD. The State Water Board addressed this uncertainty in Order WQ 2012-0013 for the Sacramento Regional Wastewater Treatment Plant as follows, "*Neither the Clean Water Act, nor U.S. EPA's regulations allow indefinite delay until better science can be developed, or a statewide policy can be adopted. In almost every case, more data can be collected and the hope or anticipation that better science will materialize is always present in the context of science-based agency decision-making…The U.S. Supreme Court has held that U.S. EPA cannot avoid its statutory obligation by noting the presence of uncertainty*[1]*. Various appellate courts have held that where a complex statute requires an agency to set a numerical standard or effluent limitation, it will not overturn the agency's choice of a precise figure where it falls within the 'zone of reasonableness.'*[2]"

The Basin Plan states, "*Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or Regional Water Board, and that may be reasonably controlled*." (page IV-15.00) Since the Delta is presently exhibiting cultural eutrophication at the current nutrient loading levels[3], discharge at the current nutrient loading will not be protective of downstream beneficial uses. Nutrient reduction is necessary to protect the beneficial uses of the Delta.

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[1] *Massachusetts v. U.S. Environmental Protection Agency* (2007) 549 U.S. 497, 534.

[2] *Upper Blackstone Water Pollution Abatement Dist. v. U.S. Environmental Protection Agency, supra*, 690 F.3d at p. 28; *National Maritime Safety Assn. v. Occupational Safety & Health Admin.* (D.C. Cir. 2011) 649 F.3d 743, 752; *Reynolds Metals Co. v. U.S. Environmental Protection Agency* (4th Cir. 1985) 760 F.2d 549, 559.

[3] Archibald Consulting et al. 2012. California State Water Project Watershed Sanitary Survey, 2011 Update. Prepared for the State Water Project Contractors Authority and the California Department of Water Resources; Alameda County Flood Control District et al., Summary of Drinking Water Quality Issues and Requested Permit Conditions for the Sacramento Regional Wastewater Treatment Plant NPDES Permit Renewal, (December 2007)

This Order contains a final AMEL for nitrate plus nitrite of 10 mg/L (total as N), based on the technical capability of POTWs. An AMEL of 10 mg/L for nitrate plus nitrite as nitrogen is appropriate and is within the zone of reasonableness. This limit is readily achievable using standard denitrification technologies Although effluent limits based on USEPA's Aggregate Ecoregion I Criteria for total nitrogen would further reduce nutrient loading, effluent limits based on this criteria are not technologically feasible with standard treatment technologies. Additionally, nutrient cycling in waterways is complex, USEPA's Ecoregion I Criteria have not been developed considering the Delta's unique nutrient needs and characteristics; and therefore, may not be directly applicable. The criteria do, however, provide a reference to consider for the protection of aquatic life beneficial uses. The nitrate plus nitrite effluent limit in the proposed Order is protective of the MUN beneficial use, and is a technologically achievable limit that results in a reduction in nutrient loadings from the previous Order that is protective of aquatic life beneficial uses.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum effluent nitrate concentration of 28 mg/L (as N) is greater than applicable WQBEL. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. The Discharger submitted an infeasibility analysis on 18 March 2014 (revised on 20 March 2014). As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

v. **Pathogens**

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

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

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under CWC Section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBELs are required.

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

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 WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." 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 Old River include municipal and domestic supply, water contact recreation, and agricultural irrigation supply. Typically, the Central Valley Water Board requires Title 22 or equivalent tertiary treatment when there is less than 20:1 dilution, based on recommendations by DPH. However, as discussed above in section IV.C.2.c of this Fact Sheet, the discharge has at least 20:1 dilution at all times. Although there is 20:1 dilution, tertiary level treatment is required based on the following:

(1) The State Water Project and Central Valley Water Project pumps are located approximately 2 miles downstream of the discharge. Therefore, providing a high level of disinfection is appropriate to protect the MUN beneficial use.

(2) The discharge is located in a portion of the Delta that is used heavily for recreation. Because of this, there is the chance for public exposure to the discharge as it mixes into the receiving water. As described above, there is high average dilution (1000:1); however, the dilution has been less than 20:1 during critical flow periods. Providing tertiary level disinfection is appropriate to ensure protection of recreation beneficial use.

(3) The Central Valley Water Board adopted Resolution R5-2009-0028[1] which encourages recycling of wastewater. The facility has proposed upgrades that will achieve equivalent to tertiary level treatment for all but pathogen removal. As described in the comment, there is additional, incremental cost associated with ensuring reliable pathogen removal to 2.2 MPM/100 mL, however, ensuring tertiary level capabilities for pathogen removal has the benefit of the flexibility to recycle wastewater. Requiring that the discharge achieve tertiary-level pathogen removal is consistent with Resolution R5-2009-0028.

(4) With the significant pelagic organism decline, the fragile nature of the Delta, unknown Delta stressors and recent legal decisions on water supply diversions for the Delta, it is prudent to require a high level of treatment for discharges within the Delta. Requiring pathogen removal to the Title 22 tertiary, or equivalent, levels ensures tertiary filtration processes are also in place.

(5) The Facility provides UV disinfection without filtration, which is not a normal wastewater engineering practice due to the need for low turbidity wastewater for effective UV disinfection. The requirement to provide tertiary filtration is necessary to ensure reliable disinfection to protect the contact and non-contact recreation beneficial uses.

To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

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

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 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 DPH recommended Title 22 disinfection criteria, weekly average specifications are impracticable for turbidity. 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.

[1] Resolution R5-2009-0028 in Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants, adopted 23 April 2009

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 considered the following factors in Water Code section 13241:

(1) The past, present and probable future beneficial uses of the Old River include municipal and domestic water supply (MUN); agricultural supply, including stock watering (AGR); industrial process supply (PROC); industrial service supply (IND); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm spawning, reproduction, and/or early development (SPWN); wildlife habitat (WILD); and navigation (NAV).

(2) The environmental characteristics of the hydrographic unit, including the quality of the available water, will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities that would otherwise be unsafe according to recommendations from DPH.

(3) Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors that affect water quality in the area.

(4) The economic impact of requiring an increased level of treatment has been considered. The Discharger has estimated that the increased level of treatment will cost approximately $4.616 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, which includes prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment specific for those pollutants.

(5) The requirement to provide tertiary treatment for this discharge will not adversely impact the need for housing in the area. The potential for developing housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DPH recommends that, in order to protect public health, relatively undiluted wastewater effluent must be treated to a tertiary level for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

(6) It is the Central Valley Water Board's policy, (Basin Plan, page IV-12.00, Policy 2) to encourage the reuse of wastewater. The Central Valley Water Board requires dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of

wastewater treatment that will allow for a greater variety of uses in accordance with CCR, Title 22.

(7) The Central Valley Water Board has considered the factors specified in Water Code section 13263, including considering the provisions in Water Code section 13241, in adopting the disinfection and filtration requirements under Title 22 criteria. The Central Valley Water Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the Old River, including water contact recreation and irrigation uses.

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

(d) **Plant Performance and Attainability.** Analysis of the effluent data indicates that the Discharger can immediately comply with the effluent limitations for BOD_5, but the Discharger cannot currently comply with the effluent limitations for total coliform organisms or TSS, or the operational specifications for turbidity and UV disinfection. The Discharger submitted an infeasibility analysis on 18 March 2014 (revised on 20 March 2014). As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

vi. **pH**

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

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

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For

priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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

The Facility is a POTW that treats domestic wastewater. Based on 697 samples collected between January 2009 and December 2012, the maximum pH reported was 8.2 and the minimum was 7.1. Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

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

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the range of the pH concentration in the effluent is 7.1 to 8.2, which meets the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **Temperature**

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

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

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. 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 WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" 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 Thermal Plan requirements.

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

(d) **Plant Performance and Attainability.** Analysis of the effluent and upstream receiving water data shows that the maximum effluent increase in temperature from the receiving water was 13ºF on 21 January 2009. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

4. WQBEL Calculations

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

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

where:

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

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

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

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

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

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

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

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

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

Summary of Water Quality-Based Effluent Limitations
Discharge Point 001

Table F-14. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--
	lbs/day[1]	180	260	350	--	--
	lbs/day[2]	200	290	390	--	--
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[2]	200	290	390	--	--
Priority Pollutants						
Copper, Total Recoverable	µg/L	45	--	63	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.7	--	2.1	--	--
	lbs/day[2]	14	--	41	--	--
Diazinon and Chlorpyrifos	µg/L	[3]	--	[4]	--	--
Electrical Conductivity @ 25°C	µmhos/cm	2,100[5]	--	--	--	--
Methylmercury	grams/year	--	--	0.37[6]	--	--
Nitrate Plus Nitrite	mg/L	10	--	--	--	--
Temperature	°F	--	--	[7]	--	--
Total Coliform Organisms	MPN/100 mL	--	2.2[8]	23[9]	--	240

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

[1] Based on an average dry weather flow of 2.1 MGD. Effective until the Discharger demonstrates compliance with Special Provision VI.C.6.b of this Order.

[2] Based on an average dry weather flow of 2.35 MGD. Effective upon compliance with Special Provision VI.C.6.b of this Order.

[3] Average Monthly Effluent Limitation

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

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

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

[4] Maximum Daily Effluent Limitation

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

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

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

[5] Applied as an annual average effluent limitation.

[6] The total calendar annual load of methylmercury shall not exceed 0.37 grams.

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

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

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

5. Whole Effluent Toxicity (WET)

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

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

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. 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 WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" Although the discharge has been consistently in compliance with the acute effluent limitations in Order R5-2008-0179-01, the Facility

is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc*." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

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

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00.) As shown in the table below, based on chronic WET testing performed by the Discharger from January 2009 through December 2012, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

Table F-15. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow *Pimephales promelas*		Water Flea *Ceriodaphnia dubia*		Green Algae *Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
9 February 2009	--	<1	--	**2**	<1
6 April 2009	<1	<1	<1	<1	--
20 July 2009	--	<1	--	<1	--
22 July 2009	--	--	--	--	<1
19 October 2009	--	<1	--	<1	--
21 October 2009	--	--	--	--	<1
18 January 2010	--	<1	--	<1	--
19 April 2010	--	<1	--	<1	--
22 April 2010	--	--	--	--	<1
5 May 2010	<1	--	<1	--	--
19 July 2010	--	<1	--	<1	--
21 July 2010	--	--	--	--	<1
18 October 2010	--	<1	--	<1	--
20 October 2010	--	--	--	--	**1.3**
17 January 2011	--	<1	--	<1	--
19 January 2011	--	--	--	--	<1
18 April 2011	--	<1	--	<1	--

Date	**Fathead Minnow** *Pimephales promelas*		**Water Flea** *Ceriodaphnia dubia*		**Green Algae** *Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
20 April 2011	--	--	--	--	<1
18 July 2011	<1	<1	<1	<1	--
20 July 2011	--	--	--	--	<1
18 October 2011	<1	<1	<1	<1	<1
16 January 2012	<1	<1	<1	**1.3**	--
18 January 2012	--	--	--	--	<1
16 April 2012	<1	<1	<1	<1	--
18 April 2012	--	--	--	--	<1
30 July 2012	<1	<1	<1	<1	--
1 August 2012	--	--	--	--	<1
15 October 2012	<1	<1	<1	<1	--
17 October 2012	--	--	--	--	<1

Dilution has been granted for the chronic condition in this Order. Chronic toxicity testing results exceeding 10 chronic toxicity units (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. No effluent toxicity was observed in the three-species toxicity testing events conducted during the term of Order R5-2008-0179-01. Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective with regards to chronic toxicity.

The Monitoring and Reporting Program of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for Toxicity Reduction Evaluation (TRE) initiation if toxicity is demonstrated.

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a TRE in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some

effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia, BOD_5, and TSS because they are oxygen demanding substances. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design average dry weather flow permitted in sections IV.A.1.g of this Order.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires AWELs and AMELs for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, U.S. EPA recommends the use of an MDEL in lieu of AWELs for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order uses MDELs in lieu of AWELs for ammonia, copper, and diazinon and chlorpyrifos as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD_5, pH, and TSS, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The Clean Water Act 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 Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2008-0179-01, with the exception of aluminum and iron, for which the effluent limitations have been removed. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0179-01. 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 WQBELs "*except in compliance with Section 303(d)(4)*." CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

   i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.

ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The Old River is considered an attainment water for aluminum and iron because the receiving water is not listed as impaired on the 303(d) list for these constituents[1]. As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for aluminum and iron from Order R5-2008-0179-01 meets the exception in CWA section 303(d)(4)(B).

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.a of this Fact Sheet, updated information that was not available at the time Order R5-2008-0179-01 was issued indicates that aluminum and iron do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. **Aluminum.** Effluent monitoring data collected between January 2009 and December 2012 indicates that aluminum in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

ii. **Iron.** Effluent monitoring data collected between January 2009 and December 2012 indicates that iron in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

Thus, removal of the effluent limitations for aluminum and iron from Order R5-2008-0179-01 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal of effluent limitations based on information that was not available at the time of permit issuance.

4. Antidegradation Policies

The Discharger requested in the ROWD authorization to discharge up to an average dry weather flow of 2.35 MGD to accommodate planned growth within the Discharger's service area. The Discharger developed an Antidegradation Analysis (revised 25 March 2014) that provides an antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, the Antidegradation Analysis evaluated whether changes in water quality resulting from the proposed increase in the design average dry weather flow discharge to the Old River (from 2.1 MGD to 2.35 MGD) are consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses.

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

a. **Water quality parameters and beneficial uses which will be affected by the proposed expansion and the extent of the impact.** Compliance with this Order will not adversely impact beneficial uses of the receiving water or downstream receiving waters. All beneficial uses will be maintained and protected. 40 CFR 131.12 defines the following tier designations to describe water quality in the receiving water body.

Tier 1 Designation: *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. (40 CFR 131.12)*

Tier 2 Designation: *Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 CFR 131.12)*

The tier designation is assigned on a pollutant-by-pollutant basis. The Antidegradation Analysis did not delineate the tier designation for pollutants, but instead conducted an analysis of the potential impact of each constituent of concern and their use of assimilative capacity. The constituents of concern evaluated for this discharge were pH, BOD_5, TSS, total coliform organisms, temperature, copper, nitrate, nitrite, ammonia, mercury, and salinity. However, of the constituents evaluated, only mercury is listed on the 2010 303(d) list as impaired. Therefore, Old River is considered a Tier 1 receiving water for mercury. The remaining constituents assessed are not included on the 303(d) list as impaired and therefore Old River is considered a Tier 2 receiving water for these pollutants.

Based on the Antidegradation analysis, the proposed discharge would result in an increase in mass loading, compared with the current condition (i.e., discharge of 2.1 MGD of secondary treated wastewater) for salinity (e.g., electrical conductivity, total dissolved solids, and chloride). For all other constituents of concern, including mercury, the proposed discharge is expected to result in a reduction in mass loading to the Old River compared to the current condition, because more stringent effluent limitations are required in this Order that will result in improvements to effluent quality.

As discussed below, the antidegradation analysis evaluated whether allowance of an increase in salinity concentrations is in the best interest of the people of the State. In addition, discussed below is the timing of the flow increase, due to allowance of compliance schedules for methylmercury, disinfection and nitrogen removal.

b. **Scientific Rationale for Determining Potential Lowering of Water Quality.** The rationale used in the Antidegradation Analysis is based on 40 CFR 131.12, U.S. EPA memorandum Regarding Tier 2 Antidegradation Reviews and Significance Thresholds (U.S. EPA 2005), U.S. EPA Region 9 Guidance on Implementing the

Antidegradation Provisions of 40 CFR 131.12 (U.S. EPA 1987), State Water Board Resolution No. 68-16, a State Water Board 1987 policy memorandum to the Regional Water Boards, and an Administrative Procedures Update (APU 90-004) issued by the State Water Board to the Regional Water Boards.

The scientific rationale used in the Antidegradation Analysis to determine if the Order allows a lowering of water quality was based on a comparison of the mass loadings to the Old River under the current condition with loadings from the proposed upgraded and expanded Facility. The Antidegradation Analysis analyzed a list of constituents of concern[1] to determine if the proposed increase in discharge from 2.1 MGD to 2.35 MGD authorized by this Order potentially allows significant increase of the amount of pollutants present in the upstream and downstream receiving water influenced by the proposed discharge. Pollutants that significantly increase concentration or mass downstream require an alternatives analysis to determine whether implementation of alternatives to the proposed action is in the best socioeconomic interest of the people of the region, and to the maximum benefit of the people of the State. The State Water Board's APU 90-04 provides guidance for conducting the antidegradation analysis and recommends a simple antidegradation analysis when *"…using its best professional judgement and all available pertinent information, the Regional Board decides that the discharge will not be adverse to the intent and purpose of the State and federal antidegradation policies."* APU 90-04 includes several conditions for allowing simple antidegradation analysis, including where "*A Regional Board determines the proposed action will produce minor effects which will not result in a significant reduction of water quality; e.g., a POTW has a minor increase in the volume of discharge subject to secondary treatment."* This Order allows a minor increase in the volume of discharge of 0.25 MGD and, as shown in Table F-16, below, the amount of assimilative capacity used for the proposed flow increase is well below 10%. Therefore, the Central Valley Water Board concludes that the proposed increase will produce minor effects which will not result in a significant reduction in water quality, and a simple antidegradation analysis may be conducted.

Table F-16. Percent Assimilative Capacity Used

Constituent	Units	Water Quality Objective	Maximum Background Concentration	Average Effluent Concentration	Assimilative Capacity		
					2.1 mgd	2.35 mgd	% Used
EC	µmhos/cm	1000	764	2138	229.7	228.9	**0.33%**
TDS	mg/L	450	421	1240	25.2	24.8	**1.78%**
Chloride	mg/L	250	175	367	74.1	74.0	**0.14%**

Timing of Capacity Increase. This Order allows compliance schedules for methylmercury, disinfection (total coliform organisms and total suspended solids), and nitrogen removal (nitrate plus nitrite and ammonia). Consequently, the timing of the capacity increase related to the compliance schedules must be considered. The final effluent limits for nitrate plus nitrite and ammonia will result in significant nitrogen reduction in the effluent when the final effluent limitations become effective in 2023. Even in the interim, however, this Order includes new, more stringent interim effluent limits for nitrate plus nitrite and ammonia that will result in an immediate reduction in the allowance of total nitrogen discharged to Old River, so the flow increase will not result in an increase in total nitrogen loadings. The new

[1] Constituents of concern considered include pH, BOD, TSS, total coliform organisms, temperature, copper, nitrate, nitrite, ammonia, mercury, and salinity

final methylmercury effluent limits become effective in 2030 and also result in improved effluent quality. Similar to the nitrogen constituents, mercury loadings will not increase due to the flow capacity increase. This is because this Order includes an interim performance-based mass loading effluent limit for total mercury that ensures the mercury loading does not increase. Therefore, for the nitrogen constituents and mercury, an immediate capacity increase does not result in an increase in the mass of pollutants being discharge and complies with the antidegradation requirements.

The new disinfection requirements and resulting final effluent limits for total coliform organisms are effective in 2022 and final effluent limits for total suspended solids are effective in 2017. The final effluent limits will result in improvements in effluent quality. The interim effluent limits for these constituents do not prevent an allowed increase in loading with a flow capacity increase, as is the case for the nitrogen constituents and mercury. Therefore, the timing of the flow increase has been considered related to these constituents. This Order requires installation of tertiary filtration by 31 December 2017, which will address the possible allowed degradation from these constituents. However, as discussed below, the flow capacity increase is allowed immediately considering the minimal amount of potential degradation, the temporary nature of the potential degradation, and the probable adverse socioeconomic impacts in the community caused by the delay in the permitted flow increase.

The Facility utilizes Ultraviolet light (UV) disinfection of secondary effluent without filtration, which is not a typical engineering practice. Primarily due to the need for a low turbidity wastewater for effective UV disinfection, the Facility has experienced periodic violations of the total coliform organisms effluent limits. The Discharger has made improvements to the UV system over the past 5 years to improve reliability, such as correcting the UV weir elevations to ensure accurate flow measurement through the UV reactors for proper UV dosage control and installation of an additional UV light bank for increased UV dosage. The Discharger is currently in the process of adding tertiary filtration to further improve disinfection reliability, which will also result in a reduction in effluent total suspended solids. The immediate permitted increase in discharge capacity provided in this Order has the potential to allow a temporary minimal amount of degradation due to pathogens and total suspended solids until installation of the tertiary filters. This potential degradation is insignificant and temporary, and does not outweigh probable adverse impacts to housing and economic growth in Discovery Bay that would result from delaying the flow capacity increase. The immediate capacity increase is consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses. The capacity increase is allowed immediately based on the above findings.

c. **Justification for Allowing Degradation.** The following rationale is the justification for the proposed increase in discharge to the receiving water:

i. The proposed project and associated increase in permitted discharge is necessary as a means to improve wastewater treatment for the Discharger's service area. Failure to approve the increase likely would have significant

adverse economic and social impacts on the citizens and businesses of Contra Costa County.

ii. The increase in the Facility flow rate will not adversely affect existing or probable beneficial uses of the Old River, nor will it cause water quality to fall below applicable water quality objectives. There is minimal effect because the upgraded and expanded Facility will provide increased treatment compared with the existing Facility.

iii. Although the increased discharge may produce small increases in mass loadings of salinity, only a small percentage of the assimilative capacity will be used with the flow increase. The small decrease in water quality with respect to the constituents considered in the analysis is unlikely to affect beneficial uses of the Old River or downstream receiving water.

iv. Based on the small increase in loading the Central Valley Water Board finds that this Order includes permit requirements that result in the implementation of best practicable treatment or control, necessary to assure that a pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for BOD_5 and TSS. Restrictions on these constituents are discussed in section IV.B of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are not more stringent than required by the CWA.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual WQBELs for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to 30 May 2000, but not approved by U.S. EPA before that date, are nonetheless "*applicable water quality standards for purposes of the CWA*" pursuant to 40 C.F.R. section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for total coliform organisms that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in section IV.C.3 of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	2.1[2]	--	--	--	--	DC
		2.35[3]	--	--	--	--	
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--	TTC
	lbs/day[4]	180	260	350	--	--	
	lbs/day[5]	200	290	390	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP
Total Suspended Solids	mg/L	10	15	20	--	--	TTC
	lbs/day[5]	200	290	390	--	--	
	% Removal	85	--	--	--	--	CFR
Priority Pollutants							
Copper, Total Recoverable	µg/L	45	--	63	--	--	CTR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	0.7	--	2.1	--	--	NAWQC
	lbs/day[5]	14	--	41	--	--	
Diazinon and Chlorpyrifos	µg/L	[6]	--	[7]	--	--	TMDL
Electrical Conductivity @ 25°C	µmhos/cm	2,100[8]	--	--	--	--	PB
Methylmercury	grams/year	--	--	0.37[9]	--	--	TMDL
Nitrate Plus Nitrite	mg/L	10	--	--	--	--	BP
Temperature	°F	--	--	[10]	--	--	TP
Total Coliform Organisms	MPN/100 mL	--	2.2[11]	23[12]	--	240	Title 22
Acute Toxicity	% Survival	70[13]/90[14]	--	--	--	--	BP

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

[1] DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
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 applicable TMDL.
PB – Based on Facility performance.
TP – Based on the Thermal Plan.
Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

[2] Effective until the Discharger demonstrates compliance with Special Provision VI.C.6.b of this Order, the average dry weather flow shall not exceed 2.1 MGD.

[3] Effective upon compliance with Special Provision VI.C.6.b of this Order, the average dry weather flow shall not exceed 2.35 MGD.

[4] Based on an average dry weather flow of 2.1 MGD. Effective until the Discharger demonstrates compliance with Special Provision VI.C.6.b of this Order.

[5] Based on an average dry weather flow of 2.35 MGD. Effective upon compliance with Special Provision VI.C.6.b of this Order.

[6] Average Monthly Effluent Limitation

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

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

[7] Maximum Daily Effluent Limitation

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

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

[8] Applied as an annual average effluent limitation.

[9] The total calendar annual load of methylmercury shall not exceed 0.37 grams.

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

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

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

[13] 70% minimum of any one bioassay.

[14] 90% median for any three consecutive bioassays.

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 a compliance schedule longer than 1 year for the effluent limitations for methylmercury, nitrate plus nitrite, ammonia, TSS, and total coliform organisms. The Compliance Schedule Policy requires that interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent.

The interim effluent limitations for mercury, nitrate plus nitrite, and ammonia are based on Facility performance. The interim effluent limitations for TSS and total coliform organisms are based on the effluent limitations in Order R5-2008-0179-01.

1. **Compliance Schedules for Methylmercury, Nitrate Plus Nitrite, Ammonia, and Title 22 (or equivalent) Disinfection Requirements.** This Order contains a new final effluent limitation for methylmercury based on the new objective that became effective on 20 October 2011. This Order includes a more stringent effluent limitation for nitrate plus nitrite based on a new interpretation of the narrative objective for biostimulatory substances and taste and odors. The effluent limitations for ammonia are more stringent based on the updated 2013 USEPA National Ambient Water Quality Criteria for ammonia. The establishment of Title 22 (or equivalent) disinfection requirements has not been previously required for this discharge. This Order requires the Discharger to meet Title 22 (or equivalent) disinfection requirements, which represents a newly interpreted water quality objective that results in permit limitations for TSS and total coliform organisms more stringent than the limitations previously imposed. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, compliance schedules for compliance with the effluent limitations for methylmercury, nitrate plus nitrite, ammonia, TSS, and total coliform organisms is established in the Order.

   A compliance schedule for methylmercury is necessary because the Discharger must implement actions, including a Phase 1 Methylmercury Control Study and possible upgrades to the Facility, to comply with final effluent limitations. Compliance schedules for nitrate plus nitrite and ammonia, are necessary because the Discharger must implement actions, including design and construction of nitrification/denitrification facilities to comply with the more stringent permit limitations. Compliance schedules for TSS and total coliform organisms are necessary because the Discharger must implement actions, including design and construction of new coagulation, flocculation, and filtration facilities and upgrades to the existing UV disinfection system, to comply with the more stringent permit limitations.

   The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutants in the waste stream. The Discharger is currently implementing a Mercury Evaluation Program that was submitted to the Central Valley Water Board, as required by Orders R5-2003-0067 and R5-2008-0179-01. The Discharger has collected routine monitoring for ammonia (weekly), nitrate (twice per month), TSS (twice per week), and total coliform organisms (twice per month). The source of these pollutants is from domestic sewage and the biological treatment system.

   The compliance schedules are 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 wasteload allocation for methylmercury. The interim effluent limits and final compliance date may be modified at the completion of Phase 1. The Discharger needs time design, fund, and construct the necessary facilities to achieve compliance with the effluent limitations for ammonia, nitrate plus nitrite, TSS, and total coliform organisms, and the compliance schedules and interim milestones in this Order are as short as possible given the type of facilities being constructed and industry experience with the time typically required to construct similar facilities.

Interim performance-based limitations have been established in this Order. The interim limitations were determined as described in section IV.E.2, 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.

2. **Interim Limitations for Methylmercury, Nitrate Plus Nitrite, Ammonia, TSS, and Total Coliform Organisms.** 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, AWEL, MDEL, etc.) for effluent limitations for which compliance protection is intended.

   a. **Total Mercury.** During Phase 1, the Delta Mercury Control Program requires POTWs to limit their discharges of inorganic (total) mercury to Facility performance-based levels. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of 12-month running effluent inorganic (total) mercury loads. 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.

   The interim limitation for total mercury in this Order is based on the current treatment plant performance. In developing the interim limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9 percent of the data points lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the 99.9th percentile was determined using the mean plus 3.3 standard deviations of the available data.

   Total mercury effluent data collected from January 2009 through December 2012 was used to determine the performance-based interim effluent limitation. The 12-month running mercury loads were calculated, and the average and standard deviation of the 12-month running mercury loads were determined and used to calculate the 99.9th percentile. The following table summarizes the calculations of the interim effluent limitations for total mercury. Since Discharger has not implemented early actions to reduce mercury, this performance-based interim limit has been established in this Order and does not penalize the Discharger for early actions to reduce mercury.

Table F-18. Interim Effluent Limitation Calculation Summary for Total Mercury

Parameter	Units	Maximum Annual Effluent Loading	Mean	Standard Deviation	Number of Samples	Interim Limitation
Mercury, Total Recoverable	g/year	17	10	4.4	18	24

   b. **Nitrate Plus Nitrite.** The interim effluent limitation for nitrate plus nitrite consists of a statistically-calculated performance-based MDEL derived using sample data

provided by the Discharger. The interim effluent limitation was developed using the statistical approach provided in the TSD. The TSD provides guidance on estimating the projected maximum effluent concentration using a lognormal distribution of the observed effluent concentrations at a desired confidence level, as detailed in Section 3.3 of the TSD. The multipliers in Table 3-1of the TSD were used to calculate the 99th percent confidence level and 99th percentile of the dataset based on the number of effluent samples and the coefficient of variation. The multipliers from the table were multiplied by the highest observed effluent concentration to estimate the maximum expected effluent concentration; this value was used as the interim MDEL.

Table F-19. Interim Effluent Limitation Calculation Summary for Nitrate Plus Nitrite

Parameter	Units	Maximum Effluent Concentration	Mean	Standard Deviation	Number of Samples	CV	Multiplier	Interim Limitation
Nitrate Plus Nitrite	mg/L	28	18	3.0	97	0.17	1.1	31

c. **Ammonia.** The interim effluent limitation for ammonia consists of a statistically-calculated performance-based MDEL derived using sample data provided by the Discharger. The interim effluent limitation was developed using the statistical approach provided in the TSD. The TSD provides guidance on estimating the projected maximum effluent concentration using a lognormal distribution of the observed effluent concentrations at a desired confidence level, as detailed in Section 3.3 of the TSD. The multipliers in Table 3-1 of the TSD were used to calculate the 99th percent confidence level and 99th percentile of the dataset based on the number of effluent samples and the coefficient of variation. The multipliers from the table were multiplied by the highest observed effluent concentration to estimate the maximum expected effluent concentration; this value was used as the interim MDEL.

Table F-20. Interim Effluent Limitation Calculation Summary for Ammonia

Parameter	Units	MEC	Mean	Std Dev	Count	CV	Multiplier	Interim MDEL
Ammonia Nitrogen Total (as N)	mg/L	5.5	0.16	0.4	211	2.5	1.53	**8.4**

d. **TSS and Total Coliform Organisms.** The interim effluent limitations for TSS and total coliform organisms are based on the final effluent limitations in Order R5-2008-0179-01.

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.

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

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

   a. **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. Therefore, the Discharger must meet the water quality objective at Section 5.A(1) of the Thermal Plan, which requires compliance with the following:

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

      ii. Elevated temperature waste discharges either individually or combined 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.

      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.

B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2

MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** The Delta Mercury Control Program was designed to proceed in two phases. Phase 1 spans a period of approximately 9 years. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and wasteload allocations after implementing all reasonable load reduction strategies. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules may be adjusted at the end of Phase 1, or subsequent program reviews, as appropriate. Therefore, this Order may be reopened to address changes to the Delta Mercury Control Program.

b. **Pollution Prevention.** This Order requires the Discharger to prepare pollution prevention plans (PPPs) following Water Code section 13263.3(d)(3) for mercury, nitrate plus nitrite, ammonia, and salinity. This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the PPPs.

c. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a TRE. This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

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

e. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

f. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide a chlorpyrifos and diazinon effluent limitation exemption if a discharger can demonstrate that diazinon and chlorpyrifos have not been detected in the effluent. The proposed Basin Plan Amendment may result in needed changes to the diazinon and chlorpyrifos requirements in this Order. Therefore, this Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

g. **CV-SALTS.** The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. This Order may be reopened to implement the CV-SALTS initiative.

h. **Ultraviolet Light (UV) Disinfection Operating Specifications.** UV system operating specifications are required to ensure that the UV system is operated to achieve the required pathogen removal. UV disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses) in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV disinfection system. The UV specifications for the upgraded and expanded Facility in this Order are based on the National Water Research Institute and American Water Works Association Research Foundation's (NWRI/AWWRF) guidelines for UV systems preceded by media filtration. If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, or if the Discharger installs a different type of filtration system (e.g., membrane filters), this Order may be reopened to modify the UV specifications.

i. **Biosolids Disposal.** The Discharger currently disposes of exceptional quality biosolids on a parcel adjacent to the sludge lagoons. This practice was determined

to not be a threat to public health or water quality and is currently not regulated. This Order requires the Discharger conduct a study to evaluate the impacts of this disposal practice. Based on the results of the study this Order may be reopened to modify the permit to include requirements to continue and/or modify the biosolids disposal practice.

j. **2013 Ammonia Criteria**. Ammonia criteria for waters where mussels are present were used because freshwater mussels have been surveyed in other parts of the Delta. However, if the Discharger can submit sufficient information indicating mussels are not present in the receiving water through a "mussel study to evaluate presence/absence of mussels", and it is determined that it is not necessary to protect mussels in the receiving water this Order may be reopened to allow for the recalculation procedures to determine the appropriate ammonia criteria.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00.) Based on whole effluent chronic toxicity testing performed by the Discharger from January 2009 through December 2012, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of **> 10** TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 10% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e.

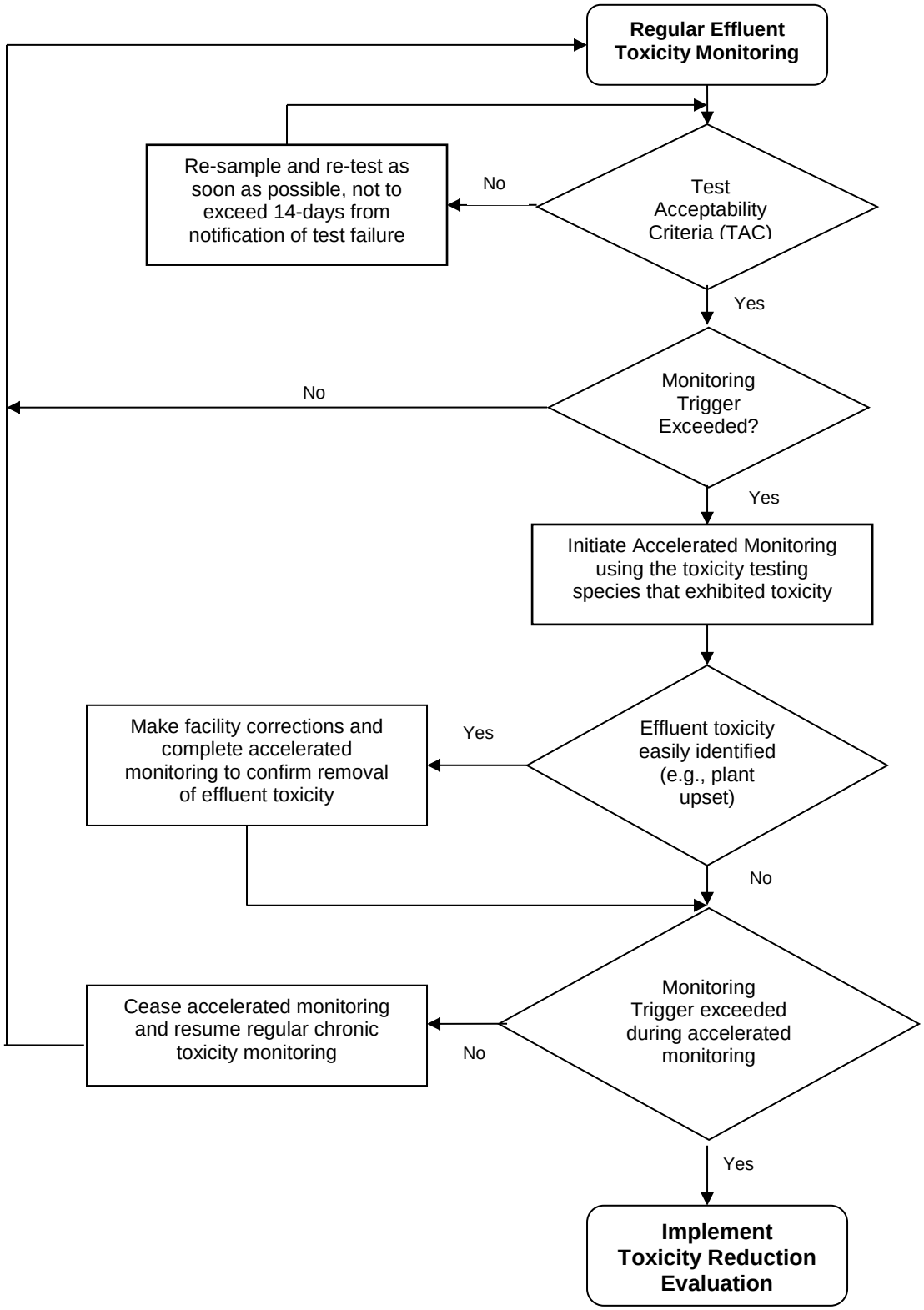
toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

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

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants,* EPA/833-B-99/002, August 1999.
- *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs),* EPA/600/2-88/070, April 1989.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition,* EPA 600/6-91/003, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I,* EPA/600/6-91/005F, May 1992.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition,* EPA/600/R-92/080, September 1993.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition,* EPA 600/R-92/081, September 1993.
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition,* EPA-821-R-02-012, October 2002.
- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA-821-R-02-013, October 2002.
- *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



b. **Phase 1 Methylmercury Control Study.** The Basin Plan's Delta Mercury Control Program requires NPDES dischargers, working with other stakeholders, to conduct methylmercury control studies (Control Studies) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve their methylmercury load and waste load allocations. Control studies can be developed through a stakeholder group approach or other collaborative mechanism, or by individual dischargers. The Discharger has agreed to participate in the Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study (Study).

The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. The objective of the Control Studies is to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve the methylmercury load and wasteload allocation. In accordance with the Delta Mercury Control Plan, a work plan was submitted on **20 April 2013** by CVCWA on behalf of a group of POTWs in the region. The Central Valley Water Board commits to supporting an adaptive management approach. The adaptive management approach includes the formation of a Stakeholder Group(s) and a Technical Advisory Committee (TAC).

The study work plan will be reviewed and approval by the TAC and subsequently approved by the Executive Officer. The Discharger shall immediately implement the work plan upon Executive Officer approval, and a progress report shall be submitted by **20 October 2015**.

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

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

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

c. **Biosolids Disposal Study**. The Discharger is currently disposing of exceptional quality biosolids on a parcel adjacent to the sludge lagoons. The Discharger shall conduct a study to evaluate the impacts to public health and water quality (groundwater and surface water) to continue this activity. The study, at minimum, shall include a characterization of the applied biosolids, the annual application rate, nutrient uptake of vegetation, and impacts to groundwater and surface water (e.g., metals, nutrients, pathogens, salinity, etc.). The study shall also evaluate the

existing groundwater monitoring network for determining impacts to groundwater and evaluating compliance with the groundwater limitations. The Discharger shall submit a study work plan by **1 September 2014** and the final study shall be submitted by **1 June 2015**.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plans (PPPs) for Mercury, Nitrate Plus Nitrite, Ammonia, and Title 22 (or Equivalent) Disinfection (i.e., TSS and Total Coliform Organisms).** A PPP for mercury, nitrate plus nitrite, ammonia, TSS, and total coliform organisms is required in this Order per Water Code section 13263.3(d)(1)(C). The PPPs required in sections VI.C.3.a, VI.C.3.b, and VI.C.3.c of this Order, shall, at a minimum, meet the requirements outlined in Water Code section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

iv. A plan for monitoring the results of the pollution prevention program.

v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

vii. A description of the Discharger's existing pollution prevention programs.

viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

b. **Pollution Prevention Plan (PPP) for Salinity.** Order R5-2008-0179-01 required the Discharger to develop a PPP in accordance with Water Code section 13263.3(d)(3) for salinity as part of a Salinity Plan to reduce its salinity impacts to the Delta. This Order requires the Discharger to continue to implement its PPP for salinity.

c. **Mercury Exposure Reduction Program.** The Basin Plan's Delta Mercury Control Program requires dischargers to participate in a Mercury Exposure Reduction Program. The Exposure Reduction Program is needed to address public health

impacts of mercury in Delta fish, including activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.

The Exposure Reduction Program must include elements directed toward:

i. Developing and implementing community-driven activities to reduce mercury exposure;

ii. Raising awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;

iii. Integrating community-based organizations that serve Delta fish consumers, Delta fish consumers, tribes, and public health agencies in the design and implementation of an exposure reduction program;

iv. Identifying resources, as needed, for community-based organizations and tribes to participate in the Program;

v. Utilizing and expanding upon existing programs and materials or activities in place to reduce mercury, and as needed, create new materials or activities; and

vi. Developing measures for program effectiveness.

This Order requires the Discharger to participate in a Mercury Exposure Reduction Program (MERP) in accordance with the Delta Mercury Control Program. By letter dated 21 November 2013, the Discharger elected to provide financial support in the collective MERP with other Delta dischargers, rather than be individually responsible for any MERP activities. The objective of the Exposure Reduction Program is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the Exposure Reduction Program objective, elements, and the Discharger's coordination with other stakeholders. The Discharger shall integrate or, at a minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. The Discharger shall continue to participate in the group effort to implement the work plan.

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 proposed for the upgraded and expanded Facility 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 and could impact UV dosage. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Upon completion of the upgrade and expansion project, 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.

Prior to the adoption of Order R5-2008-0179-01, the Discharger conducted a site-specific study of the effluent to determine a UV dose response as a function of turbidity. A laboratory study using a collimated beam was performed by Dr. Robert Emerick. The study results demonstrated that at a minimum dosage of 80 mJ/cm^2 and a turbidity of 10 NTU, the existing UV system can meet a total coliform organisms limitation of 23 MPN/100 mL as a 7-day median, and at a turbidity of 40 NTU, the system can meet total coliform organisms limitation of 240 MPN/100 mL as a daily maximum. Consistent with Order R5-2008-0179-01, this Order includes turbidity operational specifications based on the Discharger's site-specific UV study, which shall be applicable until the Discharger completes the upgrade and expansion project.

b. **Ultraviolet Light (UV) Disinfection System Operating Specifications.** This Order requires that wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to DPH reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. To ensure that the UV disinfection system is operated to achieve the required pathogen removal, this Order includes effluent limits for total coliform organisms, filtration system operating specifications, and UV disinfection system operating specifications. Compliance with total coliform effluent limits alone does not ensure that pathogens in the municipal wastewater have been deactivated by the UV disinfection system. Compliance with the effluent limits and the filtration system and UV disinfection operating specifications demonstrates compliance with the equivalency to Title 22 disinfection requirement.

The National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWRF's "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*" first published in December 2000 and revised as a Third Edition dated August 2012 (NWRI guidelines) includes UV operating specifications for compliance with Title 22. For water recycling in accordance with Title 22, the UV system shall be an approved system included in the *Treatment Technology Report for Recycled Water*, December 2009 (or a later version, as applicable) published by DPH. The UV system shall also conform to all requirements and operating specifications of the NWRI guidelines. A Memorandum dated 1 November 2004 issued by DPH to Regional Water Board executive officers recommended that provisions be included in permits for water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency of lamp sleeves, as well as, include provisions that specify minimum delivered UV dose that must be maintained (per the NWRI Guidelines).

For granular media filtration, the NWRI guidelines recommend a minimum hourly average UV dose of 100 mJ/cm^2. Therefore, this Order includes UV operating specifications requiring a minimum hourly average UV dose of 100 mJ/cm^2 and a minimum hourly average UV transmittance of 55%, per the NWRI Guidelines. If the Discharger conducts a site-specific UV engineering study that demonstrates a lower UV dose meets a Title 22 equivalent virus removal, or if the Discharger installs a different type of filtration system (e.g., membrane filters), this Order may be reopened to revise the UV operating specifications accordingly.

Consistent with Order R5-2008-0179-01, this Order includes an operational specification for UV dose of 80 mJ/cm^2 based on the Discharger's site-specific UV study, which shall be applicable until the Discharger completes the upgrade and expansion project.

c. **Treatment Pond Operating Requirements.** Consistent with Order R5-2008-0179-01, this Order requires the operation and maintenance of the sludge ponds to be conducted in a manner that prevents flooding and reduces nuisances.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Sludge/Biosolids Treatment or Discharge Specifications.** Consistent with Order R5-2008-0179-01, this Order includes sludge/Biosolids treatment and discharge specifications. The Discharger produces exceptional quality Class A biosolids. Biosolids are stored on site in solar drying bed buildings or adjacent to the buildings on concrete and disposed on a 25 acre field adjacent to the Facility. The Discharger typically applies about 4 dry tons/acre/year (see Table F-21). No crops are grown on the property and storm water from the property goes to surface water. The Discharger is not covered under the General Waste Discharge Requirements Order for the Discharge of Biosolids to Land for Use as Soil Amendment (Order 2004 0012-DWQ) for this application. There are no groundwater monitoring wells down gradient of the property to evaluate water quality impacts.

Table F-21. Biosolids Applied to Land

Year	PRODUCTION Dry Metric Tons	APPLICATION Dry Metric Tons	Dry Tons/acre[1]
2010	114	114	4.6
2011	109.15	109.15	4.4
2012	114.74	0[2]	0.0
2013	90	204.74[3]	24.1[4]

[1] Assuming a land application area of 25 acres.
[2] No biosolids disposed; rather, they were stored on site. The estimated amount stored were 114.74 dry metric tons.
[3] 2013 information is not available at the time of permit development.
[4] The 204.74 dry tons of dried biosolids for year 2013 was spread over 8.5 acres.

Although the application rate is low, the Central Valley Water Board is concerned about water quality impacts. Therefore, this Order requires the Discharger to submit a study to the Central Valley Water Board by **1 June 2015** to evaluate the impact to public health and water quality. The information from this plan will be used to re-evaluate the need for this activity to be regulated in this Order.

b. **Collection System.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The Monitoring and Reporting Requirements for the General Order were amended by Water Quality Order WQ 2008-0002-EXEC on 20 February 2008. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. The Discharger is enrolled under State Water Board General Order R5-2006-003-DWQ.

6. Other Special Provisions

a. **Title 22, or Equivalent, Disinfection Requirements.** By **31 December 2022,** to protect public health and safety, wastewater discharged to the Old River shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to DPH reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

b. **Facility Expansion.** The Discharger has requested to be permitted to expand discharge flows up to 2.35 MGD to the Old River to accommodate growth in the service area. This Order permits the Discharger to discharge up to 2.35 MGD to the Old River upon compliance with requirements listed in section VI.C.6.b of the Order.

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 State Water Board adopted the *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution 2008-0025), which is the governing policy for compliance schedules in NPDES permits (hereafter "Compliance Schedule Policy"). 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 CFR 122.47, a Discharger who seeks a compliance schedule must demonstrate additional time is necessary to implement actions to comply with a more stringent permit limitation. The Discharger must provide the following documentation as part of the application requirements:

- 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;
- Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have established;
- A proposed schedule for additional source control measures or waste treatment;
- Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim, permit effluent limit to apply if a schedule of compliance is granted;
- The highest discharge quality that can reasonably be achieved until final compliance is attained;
- 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
- Additional information and analyses to be determined by the Regional Water Board on a case-by-case basis.

Based on information submitted with the infeasibility analyses, the Report of Waste Discharge, self-monitoring reports, pollution prevention plans, and other miscellaneous submittals, it has been demonstrated to the satisfaction of the Central Valley Water Board that the Discharger needs time to implement actions to comply with the new effluent limitations for methylmercury, nitrate plus nitrite, ammonia, TSS, and total coliform organisms. Time is also needed for compliance with the operational specifications for turbidity and UV disinfection.

a. **Nitrate Plus Nitrite.** The permit limitations for nitrate plus nitrite are more stringent than the limitations previously implemented. These new limitations are based on a new interpretation of a narrative objective. The Discharger has complied with the application requirements in paragraph 4 of the Compliance Schedule Policy, and the Discharger's infeasibility analysis demonstrates the need for additional time to implement actions to comply with the new limitations. Therefore, a compliance schedule for compliance with final effluent limitations for nitrate plus nitrite is established in this Order.

   A compliance schedule is necessary because the Discharger must implement actions, including design and construction of facilities to provide denitrification, to comply with the more stringent effluent limitations.

   The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has collected routine monitoring for nitrate (twice per month). The source of nitrate plus nitrite is from domestic sewage and the biological treatment system.

   The compliance schedule is as short as possible. The Discharger needs time design, fund, and construct the necessary facilities to achieve compliance with the effluent limitations for nitrate plus nitrite, and the compliance schedules and interim milestones in this Order are as short as possible given the type of facilities being constructed and industry experience with the time typically required to construct similar facilities.

b. **Title 22 (or equivalent) Disinfection Requirements.** This Order requires more stringent disinfection requirements that result in more stringent permit limitations for TSS and total coliform organisms, and more stringent operational specifications for turbidity and UV disinfection than previously implemented. These new requirements are based on a new interpretation of a narrative objective. The Discharger has complied with the application requirements in paragraph 4 of the Compliance Schedule Policy, and the Discharger's infeasibility analysis demonstrates the need for additional time to implement actions to comply with the new limitations. Therefore, a compliance schedule for compliance with these new requirements is established in this Order.

   A compliance schedule is necessary because the Discharger must implement actions, including design and construction of new coagulation, flocculation, and filtration facilities and upgrades to the existing UV disinfection system, to comply with the more stringent effluent requirements.

c. **Methylmercury.** The Delta Mercury Control Program is composed of two phases. Phase 1 spans from 20 October 2011 through the Phase I Delta Mercury Control Program Review, expected to conclude by October 2020. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. Phase 1 includes provisions for: implementing pollution minimization

programs and interim mass limits for inorganic (total) mercury point sources in the Delta and Yolo Bypass; controlling sediment-bound mercury in the Delta and Yolo Bypass that may become methylated in agricultural lands, wetland, and open-water habitats; and reducing total mercury loading to San Francisco Bay, as required by the Water Quality Control Plan for the San Francisco Bay Basin.

At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The review also will consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.

Phase 2 begins after the Phase 1 Delta Mercury Control Program Review or by 20 October 2022, whichever occurs first, and ends in 2030. During Phase 2, dischargers shall implement methylmercury control programs and continue inorganic (total) mercury reduction programs. Compliance monitoring and implementation of upstream control programs also shall occur in Phase 2. Any compliance schedule contained in an NPDES permit must be "…*an enforceable sequence of actions or operations leading to compliance with an effluent limitation*…" per the definition of a compliance schedule in CWA Section 502(17). See also 40 CFR 122.2 (definition of schedule of compliance). The compliance schedule for methylmercury meets these requirements.

Federal Regulations at 40 CFR 122.47(a)(1) requires that, "*Any schedules of compliance under this section shall require compliance as soon as possible*…" The Compliance Schedule Policy also requires that compliance schedules are as short as possible and may not exceed 10 years, except when "…*a permit limitation that implements or is consistent with the waste load allocations specified in a TMDL that is established through a Basin Plan amendment, provided that the TMDL implementation plan contains a compliance schedule or implementation schedule*." As discussed above, the Basin Plan's Delta Mercury Control Program includes compliance schedule provisions and allows compliance with the waste load allocations for methylmercury by 2030. Until the Phase 1 Control Studies are complete and the Central Valley Water Board conducts the Phase 1 Delta Mercury Control Program Review, it is not possible to determine the appropriate compliance date for the Discharger that is as soon as possible. Therefore, this Order establishes a compliance schedule for the new, final WQBELs for methylmercury with full compliance required by **31 December 2030**, which is consistent with the Final Compliance Date of the TMDL. At completion of the Phase 1 Delta Mercury Control Program Review, the final compliance date for this compliance schedule will be re-evaluated to ensure compliance is required as soon as possible. Considering the available information, the compliance schedule is as short as possible in accordance with federal regulations and the Compliance Schedule Policy.

d. **Ammonia.** The permit limitations for ammonia are more stringent than the limitations previously implemented. These new limitations are on updated 2013

USEPA National Ambient Water Quality Criteria for ammonia. The Discharger has complied with the application requirements in paragraph 4 of the Compliance Schedule Policy, and the Discharger's infeasibility analysis demonstrates the need for additional time to implement actions to comply with the new limitations. Therefore, a compliance schedule for compliance with final effluent limitations for ammonia is established in this Order.

A compliance schedule is necessary because the Discharger must implement actions, including design and construction of nitrification facilities, to comply with the more stringent effluent limitations.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has collected routine monitoring for ammonia (weekly). The source of ammonia is from domestic sewage and the biological treatment system.

The compliance schedule is as short as possible. The Discharger needs time design, fund, and construct the necessary facilities to achieve compliance with the effluent limitations for ammonia, and the compliance schedules and interim milestones in this Order are as short as possible given the type of facilities being constructed and industry experience with the time typically required to construct similar facilities.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E, establishes monitoring and reporting requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS percent reduction requirements). The monitoring frequencies for flow (continuous), BOD_5 (weekly), pH (weekly), TSS (weekly), electrical conductivity (monthly), temperature (weekly), and total dissolved solids (monthly) have been retained from Order R5-2008-0179-01. Monitoring requirements for priority pollutants have not been retained from Order R5-2008-0179-01 as monitoring is not necessary to determine compliance with permit requirements.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for flow (continuous), BOD_5 (twice per week), pH (weekly), TSS (twice per week), copper (twice per month), mercury (quarterly), ammonia (weekly), methylmercury (quarterly), nitrate (twice per month), and temperature (weekly) have been retained from Order R5-2008-0179-01 to determine compliance with effluent limitations, where applicable, and characterize the effluent for these parameters.

3. Monitoring data collected over the term of Order R5-2008-0179-01 for aluminum, dioxins, iron, manganese, and standard minerals did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2008-0179-01.

4. R5-2008-0179-01 required monitoring for chloride, electrical conductivity, and total dissolved solids twice per month. As discussed in section IV.C.3.a of this Fact Sheet, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the water quality objectives for salinity. Therefore, this Order reduces the effluent monitoring frequency for these parameters to monthly.

5. This Order includes effluent limitations for diazinon and chlorpyrifos based on the applicable TMDL for the Sacramento-San Joaquin Delta. This Order requires annual monitoring for diazinon and chlorpyrifos to characterize their presence in the effluent and determine compliance with the applicable effluent limitations based on the TMDL.

6. This Order establishes monthly monitoring for hardness to ensure that adequate data is available to properly adjust water quality criteria for hardness-based metals.

7. This Order establishes a new effluent limitation for nitrate plus nitrite to ensure that the Facility adequately nitrifies and denitrifies the discharge. Order R5-2008-0179-01 required monitoring for nitrate but not nitrite. Therefore, this Order establishes twice monthly monitoring for nitrite.

8. Order R5-2008-0179-01 required daily monitoring for settleable solids. Settleable solids were not detected during the term of Order R5-2008-0179-01 based on 1,430 samples. Therefore, this Order reduces the monitoring frequency for settleable solids from daily to monthly.

9. As described in section II.D of this Fact Sheet, the Discharger exceeded the applicable effluent limitations for total coliform organisms multiple times during the term of Order R5-2008-0179-01. Although the Discharger has generally been in compliance with the effluent limitations since July 2011, the Facility exceeded effluent limitations in May 2012 and February through April 2013 due to operational errors. Based on the historical compliance issues, this Order increases the monitoring frequency for total coliform organisms from twice per week to three times per week to verify that the UV disinfection system is properly operated. This Order moves the point of compliance from Monitoring Location EFF-001 to an internal compliance point following the UV disinfection systems. Therefore, monitoring for total coliform organisms is required at Monitoring Locations UVS-001 and UVS-002.

10. 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 quarterly during the third year of the permit term. See Attachment E, Section IX.D for more detailed requirements related to performing priority pollutant monitoring.

11. California Water Code section 13176, subdivision (a), states: "*The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code*." DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

    Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code

§§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) The Discharger's on-site laboratory is not ELAP certified. Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2008-0179-01, monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2008-0179-01, quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

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

b. The receiving water monitoring frequency and sample type for hardness (monthly), and fecal coliform organisms (quarterly) have been retained from Order R5-2008-0179-01.

c. Order R5-2008-0179-01 required monthly monitoring for pH, dissolved oxygen, temperature, and turbidity. This Order continues this monitoring frequency.

d. Order R5-2008-0179-01 required monitoring for chloride, electrical conductivity, and total dissolved solids twice per month. As discussed in section IV.C.3.a of this Fact Sheet, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the water quality objectives for salinity. Therefore, this Order reduces the receiving water monitoring frequency for these parameters to monthly.

e. This Order establishes quarterly receiving water monitoring for copper and nitrate and twice per month for ammonia to determine assimilative capacity and assess the impacts of the discharge on the receiving water.

f. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires monitoring for priority pollutants and other pollutants of concern at Monitoring Location RSW-001 quarterly during the third year of the permit term, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See Attachment E, Section IX.D for more detailed requirements related to performing priority pollutant monitoring.

g. 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 (RMP) will provide data to better inform management and policy decisions regarding the Delta.

This Order will allow Dischargers to elect to participate in the Delta RMP in lieu of conducting all or part of the individual receiving water monitoring required in the Monitoring and Reporting Program. If the Discharger elects to cease individual receiving water monitoring and participate in the Delta Regional Monitoring Program, the Discharger shall submit a letter signed by an authorized representative to the Executive Officer informing the Board that the Discharger will participate in the Delta Regional Monitoring Program and the date on which individual receiving water monitoring under Attachment E, Sections VIII.A.1 and VIII.A.2, will cease or be modified. Approval by the Executive Officer is - required, and contingent on Delta RMP Steering Committee action on the forthcoming RMP monitoring plan.

Delta RMP data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Permit. Delta RMP monitoring stations are established generally as “integrator sites” to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta RMP 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 RMP monitoring data may be used to help establish background receiving water quality for Reasonable Potential analyses 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 RMP 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.

If the Discharger begins to participate in the Delta Regional Monitoring Program in lieu of individual receiving water monitoring, the Discharger shall continue to participate in the Delta Regional Monitoring Program until such time as the Discharger informs the Board that participation in the Delta RMP will cease and individual monitoring is reinstituted. Receiving water monitoring under Attachment E, Sections VIII.A.1 and VIII.A.2, is not required under this Order so long as the Discharger adequately supports the Delta Regional Monitoring Program. Participation in the Delta RMP by a Discharger shall consist of providing funds and/or in-kind services to the Delta RMP at least equivalent to discontinued individual monitoring and study efforts. If a discharger or discharger group fails to maintain adequate participation in the Delta RMP, as determined through criteria to be developed by the Delta RMP Steering Committee, the Steering Committee will

recommend to the Central Valley Water Board that an individual monitoring program be reinstated for that discharger or discharger group.

If the Discharger is participating in the Delta Regional Monitoring Program as described in Attachment E, Section VIII, the Receiving Water portion of the required Characterization Monitoring need not be conducted by the Discharger. Instead, data from the Delta Regional Monitoring Program will be utilized to characterize the receiving water in the permit renewal. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with this Characterization Monitoring. 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 Reasonable Potential analysis.

2. Groundwater

a. Water Code section 13267 states, in part, "*(a) A Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water 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.*" 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, a Regional Water 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 Monitoring and Reporting Program is issued pursuant to Water Code section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations

that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.

c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.5.a. of this Order. Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater. Consistent with Order R5-2008-0179-01, this Order requires annual monitoring for chloride, electrical conductivity, total dissolved solids, and standard minerals.

3. UV Disinfection System Monitoring

UV system monitoring and reporting are required to ensure that the UV system is operated to adequately inactivate pathogens in the wastewater. UV disinfection system monitoring is imposed to achieve equivalency to requirements established by DPH, and the NWRI/AWWARF's "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse.*"

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 major permittees 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 Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the posting of a Notice of Public Hearing at the Facility, via an email sent to interested parties, and through posting on the Discovery Bay Wastewater Treatment Plant' s office, Town of Discovery Bay Community Center and Community Bulletin Board, and the Central Valley Water Board's internet website.

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

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **25 April 2014**.

C. Public Hearing

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	5/6 June 2014
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

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

D. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

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

For instructions on how to file a petition for review, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Dania Jimmerson at (916) 464-4742.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	78[1]	--	200	750[2]	--	--	--	--	200	No
Ammonia Nitrogen, Total (as N)	mg/L	5.5	0.4	0.63	2.08[2]	0.63[3]	--	--	--	--	Yes
Chloride	mg/L	468	175	230	860[2]	230[4]	--	--	250	250	No[5]
Copper, Total Recoverable	µg/L	45	2.9	17[6]/4.2[7]	27[6]/5.8[7]	17[6]/4.2[7]	1,300	--	10.4	1,000	Yes
Electrical Conductivity @ 25°C	µmhos/cm	2,480	764	1,000	--	--	--	--	1,000	900	No[5]
Iron, Total Recoverable	µg/L	72[1]	--	300	--	--	--	--	--	300	No
Mercury, Total Recoverable	ng/L	20.3	--	50	--	--	50	51	--	2,000	No
Nitrate Nitrogen, Total (as N)	mg/L	28	5.1	10	--	--	--	--	--	10	Yes
Total Dissolved Solids	mg/L	1,400	421	500	--	--	--	--	--	500	No[5]

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

Footnotes:
(1) Represents the maximum observed annual average concentration for comparison with the MCL.
(2) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
(3) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.
(4) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day average.
(5) See section IV.C.3.a of the Fact Sheet (Attachment F) for a discussion of the RPA results.
(6) Criterion to be compared to the MEC.
(7) Criterion to be compared to the maximum upstream receiving water concentration.

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Ammonia Nitrogen, Total (as N)	mg/L	--	2.08	0.63	--	--	--	0.10	0.2	0.40	0.25	0.2	3.1	0.7	9.8	2.1	0.7	2.1
Copper, Total Recoverable	µg/L	1,300	27	17	1,300	1.41	1,830	0.58	39	0.76	37	37	1.2	45	1.7	63	45	63