

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION**

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**ORDER R5-2014-XXXX  
NPDES NO. CA0079219**

**WASTE DISCHARGE REQUIREMENTS FOR THE  
CITY OF MERCED  
MERCED WASTEWATER TREATMENT FACILITY  
MERCED COUNTY**

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

**Table 1. Discharger Information**

Discharger	<b>City of Merced</b>
Name of Facility	<b>Merced Wastewater Treatment Facility</b>
Facility Address	<b>10260 Gove Road</b>
	<b>Merced, CA 95341</b>
	<b>Merced County</b>

**Table 2. Discharge Location**

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
002	Disinfected Tertiary	37°, 15', 12" N	120°, 31', 46" W	Hartley Slough
003	Disinfected Tertiary	37°, 14', 13" N	120°, 31', 24" W	Merced Wildlife Management Area
004	Disinfected Tertiary	37°, 14', 41" N	120°, 31', 22" W	Land Application Area

**Table 3. Administrative Information**

This Order was adopted on:	<b>&lt;Adoption Date&gt;</b>
This Order shall become effective on:	<b>&lt;Effective Date&gt;</b>
This Order shall expire on:	<b>&lt;Expiration Date&gt;</b>
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:	<b>&lt;180 days prior to the Order expiration date&gt;</b>
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:	<b>Major discharge</b>

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 **XX August 2014**.

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**PAMELA C. CREEDON**, Executive Officer

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## I. FACILITY INFORMATION

Information describing the Merced Wastewater Treatment Facility (Facility) is summarized in Tables 1 & 2 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 J 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 Code of Federal Regulations (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 or 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 No. R5-2008-0027 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 Orders.

**III. DISCHARGE PROHIBITIONS**

- A.** Discharge of wastewater from the Facility, as the Facility is specifically described in the Fact Sheet in section II.B, in a manner different from that described in this Order is prohibited.
- B.** The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).
- C.** Neither the discharge nor its treatment shall create a condition of pollution or nuisance as defined in section 13050 of the Water Code.
- D.** The Discharger shall not allow pollutant-free wastewater to be discharged into the treatment or disposal, system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
- E.** Discharge of waste classified as "hazardous," as defined in section 2521 (a) of title 23, California Code of Regulations (CCR), et seq., is prohibited.
- F.** Discharge of wastes, tailwater, or field runoff water from the Land Application Area to surface waters or surface water drainage courses is prohibited, except if caused in association with the flooding described in section II.B.4 of the Fact Sheet and at least 30 days after the most recent application and incorporation of biosolids.
- G.** Discharge of biosolids to the Land Application Area that do not meet Class A or Class B criteria as defined in 40 CFR 503 is prohibited.
- H.** Discharge of biosolids to the Land Application Area with concentrations greater than the following is prohibited:

Pollutant	Concentration (mg/kg) <sup>1</sup>
Arsenic	75
Cadmium	85
Copper	4,300 <sup>2</sup>
Lead	840
Mercury	57 <sup>2</sup>
Molybdenum	75

Pollutant	Concentration (mg/kg) <sup>1</sup>
Nickel	420
Selenium	100
Zinc	7,500 <sup>2</sup>

<sup>1</sup> Milligrams per kilogram on a dry weight basis.

<sup>2</sup> Due to different methods of reporting constituents (dry weight vs. wet weight), biosolids meeting these metals concentration limits could exceed hazardous waste limits specified in California Code of Regulations, title 22, section 66261.24. Discharge of such biosolids is prohibited by Discharge Prohibition III.E.

#### IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

##### A. Effluent Limitations – Hartley Slough

##### 1. Final Effluent Limitations – Discharge Point 002

The discharge to Hartley Slough shall be at least disinfected tertiary recycled water as defined in Title 22 of the California Code of Regulations. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 002, with compliance measured at Monitoring Location M-001 as described in the Monitoring and Reporting Program, Attachment E:

- a. The effluent limitations specified in Table 4:

**Table 4. Effluent Limitations - Hartley Slough**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
pH	standard units	--	--	--	6.5	8.5
Ammonia Nitrogen, Total (as N)	mg/L	1.01	--	2.03	--	--
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--
Copper, Total Recoverable	ug/L	6.5	--	13.	--	--

<sup>1</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).

<sup>2</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).

<sup>3</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 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;
  - ii. 90%, median for any three consecutive bioassays.
- d. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/10 mL, at any time.
- e. **Average Dry Weather Flow.** The monthly average dry weather discharge flow shall not exceed 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification (see Provision VI.C.6.a).
- f. **Electrical Conductivity.** The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 umhos/cm or a maximum of 1,000 umhos/cm, whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.
- g. **Chlorpyrifos and Diazinon.** Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of 1.0 as defined below:
  - i. Average Monthly Effluent Limitation

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

$C_{D-avg}$  = average monthly diazinon effluent concentration in ug/L.

$C_{C-avg}$  = average monthly chlorpyrifos effluent concentration in ug/L.

- ii. Maximum Daily Effluent Limitation

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

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

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

## B. Land Discharge Specifications – Wildlife Management Area (WMA)

### 1. Final Discharge Specifications - Discharge Point 003

The discharge to the WMA shall be at least disinfected secondary-2.2 recycled water as defined in Title 22 of the California Code of Regulations. The Discharger shall maintain compliance with the following specifications at Discharge Point 003, with compliance measured at Monitoring Location M-001 as described in the attached MRP:

- a. The discharge specifications specified in Table 5:

**Table 5. Land Discharge Specifications - Wildlife Management Area**

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--

<sup>1</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).

<sup>2</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).

<sup>3</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 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;
  - ii. 90%, median for any three consecutive bioassays.
- d. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median; and
  - ii. 23 MPN/100 mL, more than once in any 30-day period.
- e. **Electrical Conductivity.** The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.
- f. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.
- g. Effluent shall be contained in the WMA.
- h. Recycled water shall be managed to conform to the requirements of Title 22, Division 4, Chapter 3, California Code of Regulations.
- i. Objectionable odors related to the discharge shall not be perceived beyond the limits of the WMA.
- j. Public contact with recycled water shall be controlled through such means as fences or signs, or other acceptable alternatives. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the

public, in a size no less than 4-inches high by 8-inches wide, that include the following wording:

"RECYCLED WATER - DO NOT DRINK  
 AQUA DE DESPERDICIO RECLAMADA - NO TOME"

Each sign shall display an international symbol similar to that shown in Attachment J.

- k. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitos. More specifically,
  - i. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, or floating vegetation.
  - ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitos, shall not be used to store recycled water.
- l. There shall be no cross-connections between potable water supply piping and piping connecting recycled water. Supplementing recycled water with potable water shall not occur except through air-gap separation or, if approved by DPH, a reduced pressure principle backflow device.
- m. Ponds within the WMA shall be managed to maintain the integrity of pond embankments.
- n. Effluent shall not be discharged to the WMA and LAA simultaneously, unless the flow to each of these locations can be metered separately.

**C. Recycled Water Specifications – Land Application Area (LAA)**

**1. Final Discharge Specifications - Discharge Point 004**

The discharge to the LAA (including the recently added abandoned ponds 5 & 6 area) shall be at least disinfected secondary-23 recycled water as defined in Title 22 of the California Code of Regulations. The Discharger shall maintain compliance with the following specifications at Discharge Point 004, with compliance measured at Monitoring Location M-001 as described in the attached MRP:

- a. The discharge specifications specified in Table 6:

**Table 6. Recycling Discharge Specifications - Land Application Area**

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--

<sup>1</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).  
<sup>2</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).  
<sup>3</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 percent.
- c. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 23 most probable number (MPN) per 100 mL, as a 7-day median; and
  - ii. 240 MPN/100 mL, more than once in any 30-day period.
- d. **Electrical Conductivity.** The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.
- e. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.
- f. Recycled water shall be contained within the LAA at all times.
- g. Recycled water shall be managed to conform to the requirements of title 22, division 4, chapter 3, California Code of Regulations.
- h. Objectionable odors related to the discharge shall not be perceivable beyond the limits of the LAA at any time.
- i. Public contact with recycled water shall be controlled through such means as fences or signs, or other acceptable alternatives. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide that include the following wording:

"RECYCLED WATER - DO NOT DRINK  
 AGUA DE DESPERDICIO RECLAMADA - NO TOME"

Each sign shall display the international symbol similar to that shown in Attachment J.

- j. The combined application of recycled water, biosolids, fertilizers and other soil amendments to the LAA shall not exceed the nitrogen or hydraulic loading reasonably necessary to satisfy the nitrogen or water uptake needs of the LAA considering the plant, soil, climate, and irrigation management system (i.e., generally accepted agronomic rates).

- k. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitos. More specifically:
  - i. Ditches not serving as wildlife habitat shall be maintained free from emergent, marginal, and floating vegetation.
  - ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitos, shall not be used to store recycled water.
- l. Discharges to the LAA shall be managed to minimize erosion.
- m. There shall be no standing water in the LAA 24 hours after recycled water is applied.
- n. The Discharger may not discharge recycled water to the LAA during periods of measurable precipitation, or when soils within the LAA are saturated.
- o. No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following are met:
  - i. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
  - ii. The well contains an annular seal that extends from the surface into the aquitard.
  - iii. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
  - iv. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
  - v. The owner of the well approves of the elimination of the buffer zone requirement.
- p. No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.
- q. No irrigation with, or impoundment of, disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.
- r. Workers shall be educated regarding hygienic procedures to ensure personal and public safety.
- s. There shall be no cross-connection between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the California Department of Public Health, a reduced pressure principle backflow device.
- t. Effluent shall not be discharged to the WMA and LAA simultaneously, unless the flow to each of these locations can be metered separately.

## V. RECEIVING WATER LIMITATIONS

### A. Surface Water Limitations

The discharge shall not cause the following in Hartley Slough:

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:**
  - i. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
  - ii. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
  - iii. The dissolved oxygen concentration to be reduced below <7.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
9. **Pesticides:**
  - a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
  - b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
  - c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
  - d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Resources Control 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 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 maximum contaminant levels (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 Material.** 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 temperature to be increased by more than 5°F on an average annual basis, cause the daily average temperature to exceed 86°F at any time, or cause the average temperature to exceed the following:

- i. 77°F from 1 June through 15 June,
- ii. 76°F from 16 May through 31 May,
- iii. 75°F from 1 May through 15 May,
- iv. 74°F from 16 April through 30 April,
- v. 73°F from 1 April through 15 April.

**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.** Turbidity to:

- a. Exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;
- b. Increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;
- c. Increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;
- d. Increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor
- e. Increase more than 10 percent where natural turbidity is greater than 100 NTUs.

**B. Groundwater Limitations**

Release of waste constituents from any storage, treatment, recycling, or disposal component associated with the WWTF shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the WWTF and discharge area(s) to contain waste constituents in concentrations equal to or greater than that listed below:

- i. Total coliform organisms of 2.2 MPN/100M mL.
- ii. Chemical constituents in concentrations that adversely affect beneficial uses, such as nitrate as nitrogen of 10 mg/L.
- iii. Toxic constituents in concentrations that produce detrimental physiological responses in human, plant, or animal life.

## VI. PROVISIONS

### A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D.
2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:
  - a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.
  - b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
    - i. violation of any term or condition contained in this Order;
    - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
    - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
    - iv. a material change in the character, location, or volume of discharge.

The causes for modification include:

- i. *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- ii. *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- iii. *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

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

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

prohibition.

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

- d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
  - i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or
  - ii. Controls any pollutant limited in the Order.

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

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.
- h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
- i. Safeguard to electric power failure:
  - i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
  - ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.
  - iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the

terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

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

The technical report shall:

- i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.
- ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.
- iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

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

- k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.
- l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

- n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Resources Control Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).
- o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, instantaneous minimum effluent limitation, instantaneous maximum effluent limitation, maximum daily effluent limitation, 1-hour average effluent limitation, acute toxicity effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (559) 445-5116 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].
- p. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

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

- q. 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.

## **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.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to evaluate the need for a mercury offset program for the Discharger.
- d. **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 Resources Control 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.
- e. **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 priority pollutant 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.
- f. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Resources Control Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.
- g. **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.
- h. **Ultraviolet (UV) Disinfection Operating Specifications.** The UV operating specifications in this Order are based on the Discharger's February 2011 *Field Commissioning Test Report*. If the Discharger conducts another site-specific UV Engineering study that identifies different UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the UV specifications.

## 2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. **Toxicity Reduction Evaluation Requirements.** 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 Toxicity Reduction Evaluation (TRE) in accordance with the TRE Work Plan that the Discharger submitted in June 2008, 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  $>1 \text{ TUc}$  (where  $\text{TUc} = 100/\text{NOEC}$ ). 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. **Land Use and Groundwater Limitations Study.** WDRs Order No. R5-2008-0027 included a Special Provision requiring the submittal of, "a technical report in the form of a work plan and proposed schedule to complete studies to compile sufficient technical data to characterize the uses of groundwater that could be impacted by discharges to the WMA and LAA and to derive appropriate groundwater limitations." The Discharger submitted a work plan to address this Special Provision in June 2008; however, a final report summarizing the results of the study has not been submitted. Since the unlined sludge drying beds are no longer being used and the Facility was recently upgraded to provide disinfected tertiary treatment, the Discharger indicated additional groundwater data need to be collected prior to completing the study. By **<Within 36 months following adoption of this Order>**, a final technical report shall be submitted that includes the following:

- i. Determination of the spatial extent of groundwater affected by, and that could be affected by, the discharge.

c. **Best Practical Treatment or Control (BPTC).** If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, by **<within 48 months following adoption of this Order>**, a BPTC Evaluation Work Plan that sets forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the facilities' waste management system to determine best practicable treatment or control for each the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed 1 year.

### 3. **Best Management Practices and Pollution Prevention - not applicable**

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

**a. Turbidity Operating Specifications.**

- i. When coagulation is used, the Discharger shall operate the treatment system to ensure that the turbidity measured at FIL-002, as described in the MRP (Attachment E), shall not exceed:
  - a. 2 NTU, as a 24-hour average,
  - b. 5 NTU, more than 5 percent of the time within a 24-hour period; and
  - c. 10 NTU, at any time.
- ii. When coagulation is not used, the Discharger shall operate the treatment system to ensure:
  - a. The turbidity of the influent to the filtration unit measured at FIL-001 (see MRP, Attachment E) shall not exceed 5 NTU for more than 15 minutes and never exceed 10 NTU; and
  - b. The effluent turbidity measured at FIL-002 (see MRP, Attachment E) shall not exceed 2 NTU at any time.

b. **Filtration Rate.** The maximum filtration rate shall not exceed 5 gallons per minute per square foot of surface area, as measured at Monitoring Location FIL-001.

c. **Ultraviolet (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 to provide virus inactivation equivalent to Title 22 Disinfected Tertiary Recycled Water:

- i. **UV Dose.** The minimum hourly average UV dose in the UV reactor shall be 118 millijoules per square centimeter ( $\text{mJ}/\text{cm}^2$ ).
- ii. **UV Transmittance.** The minimum hourly average UV transmittance (at 254 nanometers) in the wastewater measured at UVS-001 shall not fall below 56 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 and as required by DPH.
- v. Lamps must be replaced as required by DPH, or sooner, if there are indications the lamps are failing to provide adequate disinfection. Lamp age and lamp replacement records must be maintained.

**5. Special Provisions for Municipal Facilities (POTWs Only)**

**a. Pretreatment Requirements**

- i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to 40 CFR Part 403. Where 40 CFR Part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within 6

months from the issuance date of this permit or the effective date of the 40 CFR Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by USEPA or other appropriate parties, as provided in the CWA. USEPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the CWA.

- ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate and effective enforcement actions. The Discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.
- iii. The Discharger shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:
  - (a) Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);
  - (b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;
  - (c) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and
  - (d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).
- iv. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
  - (a) Wastes which create a fire or explosion hazard in the treatment works;
  - (b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;
  - (c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
  - (d) Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;
  - (e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Central Valley Water Board approves alternate temperature limits;
  - (f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - (g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and:

- (h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.
- v. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
  - (a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or:
  - (b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.
- b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 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 Resources Control 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 USEPA Regional Administrator at least **90 days** in advance of the change.
- v. The Discharger shall maintain a biosolids use or disposal plan that describes at 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. For landfill disposal, include the present classification of the landfill; and the name and location of the landfill.
- c. **Collection System.** On 2 May 2006, the State Water Resources Control Board adopted State Water Resources Control 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 had been approved for coverage under Order No. 2006-0003-DWQ for operation of its wastewater collection system.

## 6. Other Special Provisions

- a. **Increase in Permitted Flow Rate.** For authorization to discharge tertiary effluent in excess of 12.0 mgd, the Discharger must: (1) submit certification from a California-registered civil engineer with experience in the design and operation of wastewater treatment facilities that the Facility is capable of meeting discharge limitations and has adequate capacity to treat and dispose of these flow in compliance with this Order, (2) provide evidence demonstrating that the California Environmental Quality Act requirements have been satisfied, and (3) obtain the written concurrence from the Executive Officer.
- b. **Title 22 Engineering Report.** By **<Within 180 days of adoption of this Order>**, the Discharger shall submit a revised Title 22 Engineering Report detailing the use of recycled water at the land application area (including the additional 90 acres of the abandoned ponds 5 & 6) and the wildlife management area.
- c. **Title 22, or Equivalent, Disinfection Requirements.** Wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent for discharge to Hartley Slough.
- d. Except as expressly identified and authorized in this Order, the Discharger shall not use surface water or groundwater as dilution to achieve compliance with Effluent Limitations or Discharge Specifications in this Order.
- e. Physical facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full and consistent compliance with this Order when properly operated and maintained. Proper operation and maintenance shall be described in an operation and maintenance ("O&M") manual prepared by the design engineer. The O&M manual shall be reviewed at least every time a significant change, alteration, or expansion is made to the Facility. The Discharger shall certify in every annual report whether the O&M manual is complete and

reflective of the Facility and whether operation, maintenance, and staffing for the year being reported was as prescribed in the O&M manual.

**7. Compliance Schedules - Not applicable**

**VII. COMPLIANCE DETERMINATION**

- A. **BOD<sub>5</sub> and TSS Effluent Limitations (Sections IV.A.1.a, IV.B.1.a, and IV.C.1.a).**  
Compliance with the final effluent limitations for BOD<sub>5</sub> and TSS required in Limitations and Discharge Requirements sections IV.A.1.a, IV.B.1.a, and IV.C.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements section IV.A.1.b, IV.B.1.b, and IV.C.1.b for percent removal shall be calculated using the arithmetic mean of BOD<sub>5</sub> and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.
- B. **Average Dry Weather Flow Effluent Limitations (Section IV.A.1.e).** 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).
- C. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.d, IV.B.1.d, and IV.C.1.c).** 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 (or 23 where applicable) per 100 milliliters, the Discharger will be considered out of compliance.
- D. **Instantaneous Maximum Effluent Limitation for pH (Section IV.A.1.a).** If the analytical result of a single effluent sample is detected for pH and the result is less than 6.5 or greater than 8.5, a violation will be flagged and the discharger will be considered out of compliance for that single sample.
- E. **Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a are based on the permitted average dry weather flow and calculated as follows:  
$$\text{Mass (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34 \text{ (conversion factor)}$$
  
If the effluent flow exceeds the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.a shall not apply. If the effluent flow is below the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations do apply.
- F. **Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:
  - i. 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).

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

**G. Electrical Conductivity (Sections IV.A.1.f, IV.B.1.e, and IV.C.1.d).** Compliance with the electrical conductivity effluent limitations shall be determined monthly at monitoring location M-001 by comparing the 12-month rolling average of the effluent electrical conductivity data with 1,000 umhos/cm and with the 12-month rolling flow-weighted electrical conductivity data submitted for the public water supply plus 500 umhos/cm.

## ATTACHMENT A – DEFINITIONS

### **Arithmetic Mean ( $\mu$ )**

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

Arithmetic mean =  $\mu = \Sigma x / n$       where:  $\Sigma x$  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 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 Resources Control 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 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 ( $\sigma$ )**

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

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

where:

x is the observed value;

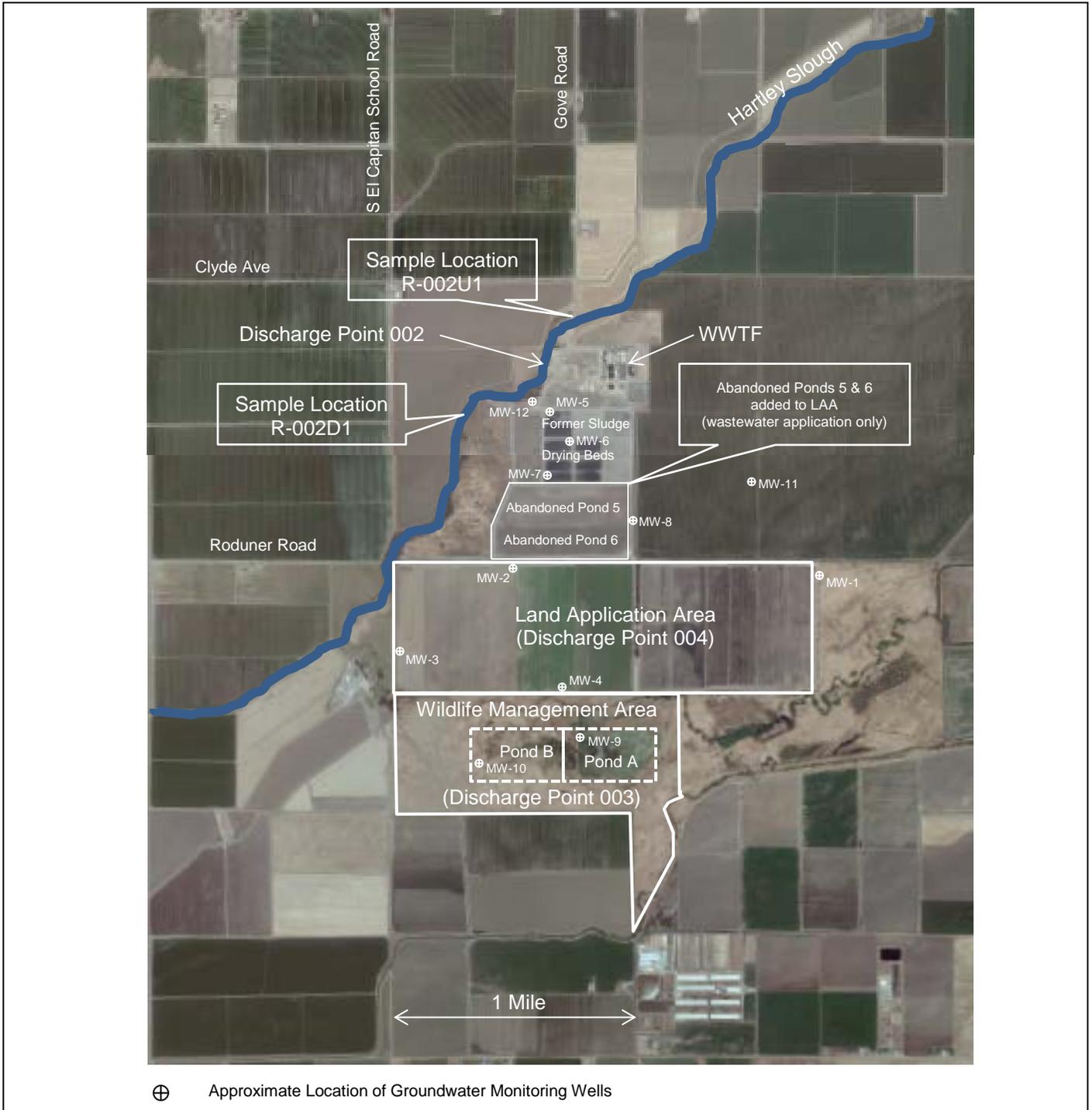
$\mu$  is the arithmetic mean of the observed values; and

n is the number of samples.

**Toxicity Reduction Evaluation (TRE)**

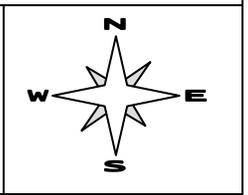
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection 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 – SITE LOCATION MAP**



Drawing Reference:  
**ATWATER & SANDY MUSH**  
 U.S.G.S TOPOGRAPHIC MAPS  
 7.5 MINUTE QUADRANGLE  
**2012**

**SITE LOCATION MAP**  
**CITY OF MERCED**  
**MERCED WASTEWATER TREATMENT**  
**FACILITY**  
**MERCED COUNTY**







## 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 Resources Control 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 Boards 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 Resources Control Board, or U.S. EPA within a reasonable time, any information which the Central Valley Water Board, State Water Resources Control 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 Resources Control 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 Resources Control 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 Resources Control 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 Resources Control 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 Resources Control 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 Resources Control 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).)

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

**G. Anticipated Noncompliance**

The Discharger shall give advance notice to the Central Valley Water Board or State Water Resources Control 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 Resources Control 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, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.
- D.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
- E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.
- F.** Laboratories analyzing monitoring samples shall be certified by the Department of Public Health (DPH), in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.
- G.** The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.
- H.** The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

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

**II. MONITORING LOCATIONS**

The Discharger shall establish the following monitoring locations shown in Table E-1 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
--	M-INF	Influent pump station
--	M-001	Effluent after disinfection
Discharge Point 002	R-002	Discharge point into Hartley Slough
--	R-002U1	Surface water location on Hartley Slough not to exceed 3/4 mile upstream of R-002.
--	R-002D1	Surface water location on Hartley Slough not to exceed 3/4 mile downstream of R-002. Monitoring location must also be upstream of any surface water body confluence with Hartley Slough.
--	UVS-001	A location where a representative sample of wastewater can be collected immediately downstream of the ultraviolet light (UV) disinfection system
--	FIL-001	Monitoring of the filter influent to be measured upstream of the filter system
--	FIL-002	Monitoring of the filter effluent to be measured immediately downstream of the filters prior to the UV disinfection system
Discharge Point 003	WMA-003	Discharge to the Merced Wildlife Area
Discharge Point 004	LAA-004	Recycled water discharged to the Land Application Area (including recently added abandoned ponds 5 & 6 area)
--	MW-1 through MW-12	First encountered groundwater
--	BIO-001	Biosolids
--	S-001	Water Supply

**III. INFLUENT MONITORING REQUIREMENTS**

**A. Monitoring Location M-INF**

- 1. The Discharger shall monitor influent at M-INF as shown in Table E-2 as follows:

**Table E-2. Influent Monitoring**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	--
Electrical Conductivity @ 25°C	umhos/cm	24-hr Composite <sup>2</sup>	3/Week	1
pH	Standard Units	Grab <sup>3</sup>	1/Day	1,4
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	24-hr Composite <sup>2</sup>	3/Week	1
Total Suspended Solids	mg/L	24-hr Composite <sup>2</sup>	3/Week	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 Resources Control Board.
2. 24-hour flow proportional composite.
3. Grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.
4. A hand-held field meter may be used, provided the meter utilizes a USEPA-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.

**IV. EFFLUENT MONITORING REQUIREMENTS**

**A. Monitoring Location M-001**

1. Effluent samples shall be collected downstream from the last connection through which wastes can be admitted in to the outfall, following the last unit process. Effluent samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. The Discharger shall monitor Discharge 002, 003, and 004 at M-001 as shown in Table E-3 below. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

**Table E-3. Effluent Monitoring - Monitoring Location M-001**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter <sup>13</sup>	Continuous	--
<b>Conventional Pollutants</b>				
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	24-hr Composite <sup>2</sup>	3/Week	1
	lbs/day	Calculate	3/Week	--
Total Suspended Solids	mg/L	24-hr Composite <sup>2</sup>	3/Week	1
	lbs/day	Calculate	3/Week	--
pH	Standard Units	Grab	1/Day <sup>3</sup>	1, 4
<b>Priority Pollutants</b>				
Copper, Total Recoverable	ug/L	24-hr Composite <sup>2</sup>	1/Quarter <sup>9</sup>	1,15
Priority Pollutants and Other Constituents of Concern	vary	24-hr Composite <sup>2,5</sup>	2/Year <sup>6</sup>	1, 7
<b>Non-Conventional Pollutants</b>				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week <sup>3,8</sup>	1

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chlorpyrifos	ug/L	Grab	1/Quarter	<sup>1</sup>
Diazinon	ug/L	Grab	1/Quarter	<sup>1</sup>
Dissolved Oxygen	mg/L	Grab	1/Week	<sup>1,4</sup>
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite <sup>2</sup>	5/Week	<sup>1</sup>
Hardness (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter <sup>9</sup>	<sup>1</sup>
Nitrate + Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Week <sup>10</sup>	<sup>1</sup>
Total Nitrogen	mg/L	Grab	1/Week <sup>10</sup>	<sup>1</sup>
Turbidity	NTU	Meter	Continuous <sup>16</sup>	<sup>1</sup>
Standard Minerals <sup>11</sup>	mg/L	Grab	1/Quarter	<sup>1</sup>
Temperature	°C	Grab	1/Day <sup>3,4</sup>	<sup>1</sup>
Total Coliform Organisms	MPN/100 mL	Grab <sup>14</sup>	1/Day <sup>12</sup>	<sup>1</sup>
Whole Effluent Toxicity	See section V. below			

- <sup>1</sup> 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 Resources Control Board.
- <sup>2</sup> 24-hour flow proportional composite.
- <sup>3</sup> pH and temperature shall be recorded at the time of ammonia sample collection.
- <sup>4</sup> A hand-held field meter may be used, provided the meter utilizes a USEPA-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.
- <sup>5</sup> Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Resources Control Board.
- <sup>6</sup> Concurrent with priority pollutants receiving surface water sampling.
- <sup>7</sup> 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 I).
- <sup>8</sup> Concurrent with whole effluent toxicity monitoring.
- <sup>9</sup> Hardness samples shall be collected concurrently with metals samples.
- <sup>10</sup> Monitoring for nitrate plus nitrite (as N), and total nitrogen shall be conducted concurrently.
- <sup>11</sup> Standard minerals shall include the following: TDS, boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), sulfate, and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
- <sup>12</sup> Samples for total coliform organisms may be collected at any point following disinfection.
- <sup>13</sup> Automatic calculation of the flow of effluent discharged to Hartley Slough, via the Facility's supervisory control and data acquisition (SCADA) system, by subtracting the metered flow of effluent discharged to the LAA and WMA and metered flow of effluent discharged back to the Facility (i.e., landscape irrigation, fire suppression, equipment cleaning, etc.) from the metered flow entering the UV system is allowed.
- <sup>14</sup> Collection of total coliform organism samples from the end of the lead UV channel as water cascades down into the collection trough is allowed. The Discharger shall identify the lead channel at the time of sample collection.
- <sup>15</sup> The reporting level shall be any of the minimum levels listed in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* that are below the effluent limitations specified in Section IV.A.1.a, Table 4 of this Order.
- <sup>16</sup> Turbidity can be continuously monitored at the effluent of the filtration unit.

## 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 (**1/month**) acute toxicity testing, concurrent with effluent ammonia sampling.
  2. Sample Types – The samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location M-001.
  3. Test Species – Test species shall be fathead minnows (*Pimephales promelas*).
  4. Test Type and Duration – Test type shall be static renewal, and the test duration shall be 96 hours.
  5. Dilutions – The acute toxicity testing shall be performed using undiluted effluent.
  6. Test 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.
  7. 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 (**1/quarter**) 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 the effluent monitoring location M-001.
  3. Sample Volumes – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
  4. Test Species – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:
    - a. The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
    - b. The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
    - c. The green alga, *Selenastrum capricornutum* (growth test).
  5. Methods – The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.

6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
7. Dilutions – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and one control. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. Laboratory water control shall be used as the diluent.

**Table E-4. Chronic Toxicity Testing Dilution Series**

Sample	Dilutions (%)					Control
	100	75	50	25	12.5	
% Effluent	100	75	50	25	12.5	0
% Laboratory Water	0	25	50	75	87.5	100

8. Test Failure – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:
    - a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or
    - b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI.C.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 Work Plan, or as amended by the Discharger’s TRE Action Plan.
4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
  - a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.
  - b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.
  - c. Any information on deviations or problems encountered and how they were dealt with.

**VI. LAND DISCHARGE MONITORING REQUIREMENTS**

**A. Monitoring Location Wildlife Management Area**

1. The quality of treated effluent discharged to the Wildlife Management Area will be determined by samples collected at monitoring location M-001 as specified in sections IV.A. and V. The Discharger shall monitor the Wildlife Management Area at WMA-003 for the parameters in Table E-5:

**Table E-5. Land Discharge Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	mgd	Meter	Continuous
Berm Seepage	n/a	Observation	1/Week
Odors	n/a	Observation	1/Week
Freeboard	feet <sup>1</sup>	Observation	1/Week

<sup>1</sup> Measurements shall be made to the nearest 0.1 feet.

**VII. RECYCLED WATER MONITORING REQUIREMENTS**

**A. Monitoring Location Land Application Area**

1. The quality of treated effluent discharged to the Land Application Area will be determined by samples collected at monitoring location M-001 as specified in sections IV.A. and V. The Discharger shall monitor the Land Application Area at LAA-004 for the parameters in Table E-6:

**Table E-6. Recycling Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	mgd	Meter	Continuous
Rainfall	inches	Observation	1/Day
Wastewater Application Rate	gal/acre/day	Calculated	1/Day
Total Nitrogen Loading Rate	lbs/acre/month	Calculated	1/Month
Total Dissolved Solids Loading Rate	lbs/acre/month	Calculated	1/Month
Biosolids Applied	cubic yards/year & dry tons/year	Calculated	1/Year
Plant Available Nitrogen	lbs/acre/year	Calculated	1/Year
Residual Nitrogen	lbs/acre/year	Calculated	1/Year
Type of Crop	n/a	n/a	Each Harvest
Crop Yield	tons/acre	Calculated	Each Harvest
Molybdenum in Plant Tissue	mg/kg	Plant Tissue	1/Year
Copper in Plant Tissue	mg/kg	Plant Tissue	1/Year
Selenium in Plant Tissue	mg/kg	Plant Tissue	1/Year

**VIII. RECEIVING WATER MONITORING REQUIREMENTS**

**A. Monitoring Location Hartley Slough**

1. The Discharger shall monitor Hartley Slough at R-002U1 and R-002D1 for the parameters shown in Table E-7 as follows:

**Table E-7. Receiving Water Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/Week	1,2
	% saturation	Grab	1/Week	--
Turbidity	NTU	Grab	1/Week	1
pH <sup>3</sup>	Standard Units	Grab	1/Week	1,2
Temperature <sup>3</sup>	°C or °F	Grab	1/Week	1,2
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	1
Fecal Coliform Organisms	MPN/100 mL	Grab	1/Week	1,2
Ammonia Nitrogen, Total (as N) <sup>3</sup>	mg/L	Grab	1/Week	1
Un-ionized Ammonia	mg/L	Calculated	1/Week	1
Radionuclides	pCi/L	Grab	1/Quarter	1
Hardness (as CaCO <sub>3</sub> )	mg/L	Grab	1/Month	1
Priority Pollutants and Other Constituents of Concern <sup>5</sup>	vary	Grab	2/Year <sup>4</sup>	1,6

<sup>1</sup> 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 Resources Control Board.

<sup>2</sup> A hand-held field meter may be used, provided the meter utilizes a USEPA-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.

- <sup>3</sup> Temperature, pH, and ammonia as N shall be measured concurrently in order to calculate un-ionized ammonia.
- <sup>4</sup> Concurrent with priority pollutants effluent sampling.
- <sup>5</sup> Monitoring only required for upstream monitoring location R-002U1.
- <sup>6</sup> 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 I).

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reaches bounded by stations R-002U1 and R-002D1. Attention shall be given to the presence or absence of:

- a. Floating or suspended solids;
- b. Discoloration;
- c. Bottom deposits;
- d. Aquatic Life;
- e. Visible film, sheens, or coatings;
- f. Fungi, slimes, or objectionable odors; or
- g. Potential nuisance conditions.

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

**B. Monitoring Location First Encountered Groundwater**

- 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. MW-1 through MW-12) and shall be sampled and analyzed according to the schedule below. 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 MW-1 through MW-12, and any new groundwater monitoring wells, shall include, at a minimum, the following parameters shown in Table E-8:

**Table E-8. 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 <sup>1</sup>	±0.01 feet	Calculated	1/Quarter	--
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	degrees	Calculated	1/Quarter	--
Alkalinity (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter	<sup>2</sup>
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	<sup>2</sup>
Bicarbonate (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter	<sup>2</sup>

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Carbonate (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter	<sup>2</sup>
Chloride	mg/L	Grab	1/Quarter	<sup>2</sup>
Electrical Conductivity @ 25°C	µmhos/cm	Grab <sup>3</sup>	1/Quarter	<sup>2</sup>
Nitrate + Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	<sup>2</sup>
pH	standard units	Grab <sup>3</sup>	1/Quarter	<sup>2</sup>
Sulfate as SO <sub>4</sub>	mg/L	Grab	1/Quarter	<sup>2</sup>
Temperature	°C or °F	Grab <sup>3</sup>	1/Quarter	<sup>2</sup>
Total Dissolved Solids	mg/L	Grab	1/Quarter	<sup>2</sup>
Total Coliform Organisms	MPN/100 mL	Grab	1/Quarter	<sup>2</sup>
Arsenic	ug/L	Grab	1/Quarter	<sup>2</sup>
Boron	mg/L	Grab	1/Quarter	<sup>2</sup>
Calcium	mg/L	Grab	1/Quarter	<sup>2</sup>
Hardness (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter	<sup>2</sup>
Iron	mg/L	Grab	1/Quarter	<sup>2</sup>
Magnesium	mg/L	Grab	1/Quarter	<sup>2</sup>
Manganese	mg/L	Grab	1/Quarter	<sup>2</sup>
Potassium	mg/L	Grab	1/Quarter	<sup>2</sup>
Sodium	mg/L	Grab	1/Quarter	<sup>2</sup>

<sup>1</sup> 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.

<sup>2</sup> Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer. Samples collected for metals shall be filtered using a 0.45-micron filter prior to preservation, digestion, or analysis.

<sup>3</sup> A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

**IX. OTHER MONITORING REQUIREMENTS**

**A. Biosolids**

1. Monitoring Location BIO-001

- a. A composite sample of biosolids shall be collected annually 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. 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.”

- c. 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 S-001

- a. The Discharger shall monitor the municipal water supply at S-001 as follows. A sampling station(s) shall be established where representative sample(s) of the municipal water supply can be obtained. The results shall be reported as a flow-weighted average and be supplemented with supporting calculations.

**Table E-9. Municipal Water Supply Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Electrical Conductivity @ 25°C	µmhos/cm	Grab	2/Year	<sup>1</sup>
Standard Minerals <sup>2</sup>	mg/L	Grab	1/Three Years <sup>3</sup>	<sup>1</sup>

<sup>1</sup> 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 Resources Control Board.

<sup>2</sup> Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

<sup>3</sup> Coincident with monitoring required by the California Department of Public Health.

**C. Filtration System Monitoring**

1. Monitoring Location FIL-001

- a. The Discharger shall monitor the influent to the filtration system at Monitoring Location FIL-001 as follows:

**Table E-10. Filtration System Monitoring at FIL-001**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Filtration Rate	<sup>1</sup>	Meter	1/Day	--
Turbidity <sup>2</sup>	NTU	Meter	Continuous <sup>3,4</sup>	<sup>5</sup>

<sup>1</sup> Units are gallons per minute per square foot of surface area (gpm/ft<sup>2</sup>)

<sup>2</sup> Turbidity monitoring is only required when the Discharger is not using coagulation.

<sup>3</sup> 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.

<sup>4</sup> If turbidity exceeds 5 NTU for more than 15 minutes when not coagulating and the wastewater is not diverted, the Discharger shall collect a sample as soon as practicable for total coliform at Monitoring Location M-001 and report the duration of the turbidity exceedance.

<sup>5</sup> Pollutants shall be analyzed using analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Resources Control Board.

2. Monitoring Location FIL-002

- a. The Discharger shall monitor the effluent from the filtration system prior to disinfection at Monitoring Location FIL-002, as follows:

**Table E-11. Filtration System Monitoring at FIL-002**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Meter	Continuous <sup>1,2</sup>	<sup>3</sup>

<sup>1</sup> For continuous analyzers, the Discharger shall report documented routine meter maintenance activities in including date, time of day, and duration in which the analyzer(s) in not in operation.

<sup>2</sup> If turbidity exceeds 10 NTU when coagulation is used or 2 NTU when coagulation is not used, and the wastewater is not diverted, the Discharger shall collect a sample as soon as practicable for total coliform at Monitoring Location M-001 and report the duration of the turbidity exceedance.

<sup>3</sup> Pollutants shall be analyzed using analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Resources Control Board.

**D. Ultraviolet Light (UV) Disinfection System**

1. Monitoring Location UVS-001

a. The Discharger shall monitor the UV disinfection system at UVS-001 as follows:

**Table E-12. Ultraviolet Light Disinfection System Monitoring Requirements**

Parameter	Units	Sample Type	Monitoring Location	Minimum Sampling Frequency
Flow	mgd	Meter	UVS-001	Continuous <sup>1</sup>
Number of UV banks in operation	Number	Observation	UVS-001	Continuous <sup>1</sup>
UV Transmittance	Percent (%)	Meter	UVS-001	Continuous <sup>1</sup>
UV Dose <sup>2</sup>	mW-sec/cm <sup>2</sup>	Calculated	UVS-001	Continuous <sup>1</sup>

<sup>1</sup> 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.

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

**X. REPORTING REQUIREMENTS**

**A. General Monitoring and Reporting Requirements**

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central

Valley Water Board by letter when it returns to compliance with the compliance time schedule.

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

**B. Self-Monitoring Reports (SMRs)**

1. The Discharger shall continue to submit electronic self-monitoring reports (eSMRs) using the State Water Resources Control Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://ciwqs.waterboards.ca.gov/>). This Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs during the effective duration of the Order. This includes provisions for training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs. The CIWQS web site will provide additional directions for eSMR submittal in the event there will be service interruption.
2. The Discharger shall report in the eSMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly eSMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. eSMRs are to include all new monitoring results obtained since the last eSMR 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 eSMR.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

**Table E-13. Monitoring Periods and Reporting Schedule**

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of the second month following sample collection
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of the second month following sample collection
1/Week 3/Week 5/Week	Permit effective date	Sunday through Saturday	First day of the second month following sample collection
1/Month	Permit effective date	1 <sup>st</sup> 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	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	1 May 1 August 1 November 1 February of following year
2/Year	Permit effective date	January 1 through June 30 July 1 through December 31	1 August 1 February

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
1/Year	Permit effective date	January 1 through December 31	1 February

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

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

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory’s MDL, shall be reported as “Detected, but Not Quantified,” or DNQ. The estimated chemical concentration of the sample shall also be reported.

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

- c. Sample results less than the laboratory’s MDL shall be reported as “Not Detected,” or ND.
- d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

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

- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
- b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

6. **Reporting Requirements.** In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible.

- a. The data shall be summarized to clearly illustrate whether the Facility is operating in compliance with interim and/or final effluent limitations or with other waste discharge requirements (e.g., discharge specifications, receiving water limitations, special provisions, etc.).
  - b. Report must clearly show when discharging to the permitted discharge locations. Reports must show the date that the discharge started and stopped at each location.
  - c. The highest daily maximum for the month and monthly and weekly averages shall be determined and recorded as needed to demonstrate compliance.
7. **Calculation Requirements.** The Discharger shall submit in the eSMRs calculations and reports in accordance with the following requirements:
- a. **Mass Loading Limitations.** For BOD<sub>5</sub> and TSS, 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.
  - b. **Removal Efficiency (BOD<sub>5</sub> and TSS).** The Discharger shall calculate and report the percent removal of BOD<sub>5</sub> and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.
  - c. **Total Coliform Organisms Effluent Limitations.** The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7-day median of total coliform organisms shall be calculated as specified in Section VII.C. of the Limitations and Discharge Requirements.
  - d. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.
  - e. **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.
  - f. **Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water applicable to the specifications in Section V.A.15.i - v. of the Limitations and Discharge Requirements.
8. The Discharger shall submit eSMRs in accordance with the following requirements:
- a. When CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data as an attachment under the Attachments tab. The Discharger is not required to duplicate the submittal of data that are entered in a tabular format within CIWQS.

- b. The Discharger shall attach all laboratory analysis sheets, including quality assurance/quality control information, with all its eSMRs for which sample analyses were performed.
- c. Violations must be entered into CIWQS under the Violations tab for the reporting period in which the violation occurred.
- d. The Discharger shall attach or enter a cover letter with each eSMR. The cover letter shall include any information the Discharger would like to convey to Central Valley Water Board staff. If violations have been entered with complete entries on corrective actions and time frames, that information does not need to be repeated in the cover letter.
- e. eSMRs must be submitted to the Central Valley Water Board, signed and certified as required by the Standard Provisions (Attachment D), through the CIWQS web site.

**C. Discharge Monitoring Reports (DMRs)**

- 1. At any time during the term of this permit, the State Water Resources Control 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, 15 <sup>th</sup> 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-14. Reporting Requirements for Special Provisions Reports**

Special Provision	Reporting Requirements
Toxicity Reduction Evaluation Action Plan	<b>Within 30 days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring</b>

Special Provision	Reporting Requirements
Land Use and Groundwater Limitations Study	<Within 36 months following adoption of this Order>
Best Practical Treatment or Control (BPTC)	<Within 48 months following adoption of this Order > (if groundwater monitoring results show that the discharge of waste us threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background quality)

2. **Annual Land Application Area Report.** By 30 January of each year, the Discharger shall submit a written report containing the following:
  - a. Identification, including a map clearly showing each field or site of where and when biosolids were applied.
  - b. The parameters shown in Table E-15 below.

**Table E-15. Annual Land Application Area Report Requirements**

Parameter	Units
Quantity of biosolids applied	cubic yards/year and dry tons/year
Biosolids application rate	kg/acre/year
Volume of recycled water applied	acre-feet
Recycled water application rate	acre-feet/year
Total nitrogen loading (nitrogen from both recycled water and biosolids)	lbs/acre/year
Plant available nitrogen	lbs/acre/year
Residual nitrogen	lbs/acre/year
Crop(s) planted	name
Crop yield	tons
Results of plant tissue testing for molybdenum	mg/kg
Results of plant tissue testing for copper	mg/kg
Results of plant tissue testing for selenium	mg/kg

- c. The Discharger shall provide the following pollutant loading rate information for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.
      - i. Cumulative loading from previous year [kilograms per hectare (kg/ha)],
      - ii. Background soils concentration at 6-inch depth (kg/ha),
      - iii. Cumulative metal load to date (kg/ha), and
      - iv. Percent cumulative limit to date (%).
3. **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(s).
  - 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.
4. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Central Valley Water Board, with copies to USEPA Region 9 and the State Water Resources Control Board, describing the Discharger's pretreatment activities over the previous 12 months (1 January through 31 December). In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

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

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

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

- b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by nondomestic users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and

address of, the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

- c. The cumulative number of nondomestic users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of nondomestic user responses.
- d. An updated list of the Discharger's significant industrial users (SIUs) including their names and addresses, or a list of deletions, additions and SIU name changes keyed to a previously submitted list. The Discharger shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIUs, or specific pollutants from each industry, are subject to local limitations. Local limitations that are more stringent than the federal categorical standards shall also be identified.
- e. The Discharger shall characterize the compliance status through the year of record of each SIU by employing the following descriptions:
  - i. complied with baseline monitoring report requirements (where applicable);
  - ii. consistently achieved compliance;
  - iii. inconsistently achieved compliance;
  - iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
  - v. complied with schedule to achieve compliance (include the date final compliance is required);
  - vi. did not achieve compliance and not on a compliance schedule; and
  - vii. compliance status unknown.
- f. A report describing the compliance status of each SIU characterized by the descriptions in items iii through vii above shall be submitted for each calendar quarter by the first day of the second month following the end of the quarter. The report shall identify the specific compliance status of each such SIU and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report due every **28 February**. This quarterly reporting requirement shall commence upon issuance of this Order.
- g. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the SIUs. The summary shall include:
  - i. The names and addresses of the SIUs subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
  - ii. The conclusions or results from the inspection or sampling of each industrial user.

- h. The Discharger shall characterize the compliance status of each SIU by providing a list or table which includes the following information:
  - i. Name of SIU;
  - ii. Category, if subject to federal categorical standards;
  - iii. The type of wastewater treatment or control processes in place;
  - iv. The number of samples taken by the POTW during the year;
  - v. The number of samples taken by the SIU during the year;
  - vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
  - vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits.
  - viii. Whether the facility is in significant noncompliance (SNC) as defined at 40 CFR 403.8(f)(2)(viii) at any time during the year; and
  - ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action (e.g., warning letters or notices of violation, administrative orders, civil actions, and criminal actions), final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;
  - x. Restriction of flow to the POTW.
  - xi. Disconnection from discharge to the POTW.
- i. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs;
- j. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning: the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;
- k. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and
- l. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(viii).

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Central Valley Water Board and the:

State Water Resources Control Board  
Division of Water Quality  
1001 I Street or P.O. Box 100  
Sacramento, CA 95812

and the

Regional Administrator  
U.S. Environmental Protection Agency WTR-5  
75 Hawthorne Street  
San Francisco, CA 94105

**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	<b>5C240108001</b>
Discharger	<b>City of Merced</b>
Name of Facility	<b>Merced Wastewater Treatment Facility</b>
Facility Address	<b>10260 Gove Road</b>
	<b>Merced, CA 95341</b>
	<b>Merced County</b>
Facility Contact, Title and Phone	<b>Bill Osmer, Public Works Manager - Wastewater, 209-385-6892</b>
Authorized Person to Sign and Submit Reports	<b>Bill Osmer, Public Works Manager - Wastewater, 209-385-6892</b>
Mailing Address	<b>1776 Grogan Avenue, Merced, CA 95341</b>
Billing Address	<b>1776 Grogan Avenue, Merced, CA 95341</b>
Type of Facility	<b>POTW</b>
Major or Minor Facility	<b>Major</b>
Threat to Water Quality	<b>2</b>
Complexity	<b>A</b>
Pretreatment Program	<b>Yes</b>
Recycling Requirements	<b>Producer and User</b>
Facility Permitted Flow	<b>12.0 million gallons per day (mgd). Upon satisfaction of Provision VI.C.6.a, the facility permitted flow may increase up to 16.0 and up to 20.0 mgd.</b>
Facility Design Flow	<b>12.0 mgd (currently), 16.0 mgd (first expansion), 20.0 mgd (second expansion)</b>
Watershed	<b>Owens Creek Watershed</b>
Receiving Water	<b>Hartley Slough and First Encountered Groundwater</b>
Receiving Water Type	<b>Slough and Groundwater</b>

- A.** The City of Merced (hereinafter Discharger) is the owner and operator of the Merced Wastewater Treatment Facility (hereinafter Facility), a Publicly-Owned Treatment Works (POTW). The City of Merced owns the property at 10260 Gove Road, Merced, CA on which the Facility is located.

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 Hartley Slough, a water of the United States, tributary to the San Joaquin River within Owens Creek Watershed. The Facility also discharges to the Merced Wildlife Management Area and the Land Application Area. The Discharger was previously regulated by Order R5-2008-0027 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079219 adopted on 14 March 2008 and expired on 13 March 2013. The WDRs and NPDES permit were administratively continued in a 1 March 2013 letter from the Executive Officer. 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 Resources Control Board, Division of Water Rights, and receive approval for such a change. The State Water Resources Control Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

- C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its WDR's and NPDES permit on 12 September 2012. The application was deemed complete on 1 March 2013 and the WDRs and NPDES permit were administratively continued at that time. A site visit was conducted on 1 March 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 City of Merced and serves a population of approximately 90,000. The design daily average flow capacity of the Facility is currently 12.0 million gallons per day (mgd). Based on demand, the Discharger has plans to complete two phased expansions at the Facility to increase the design daily average flow capacity up to 16.0 mgd and up to 20.0 mgd, respectively.

### A. Description of Wastewater and Biosolids Treatment and Controls

The Facility was recently upgraded and now provides tertiary treatment that includes: a headworks pump station with fine screens and grit removal, primary clarifiers, activated sludge basins with internal separate anoxic denitrification basins, secondary clarifiers, flocculation basins, filters, ultraviolet light (UV) disinfection, and a re-aeration outfall.

Solids handling and treatment include: a dissolved air flotation thickener, primary digesters, solids holding tank, digester gas holder, solids dewatering facility, centrate pump station and equalization tank, and a lined active solar dryer. All dried biosolids are applied to the Land Application Area (LAA) (dried biosolids are not proposed to be applied to the former abandoned ponds 5 & 6 area which have been added to the LAA).

### B. Discharge Points and Receiving Waters

1. The Facility is located in Section 10, T8S, R13E, MDB&M, as shown in Attachment B, a part of this Order.
2. Disinfected tertiary treated municipal wastewater is discharged at Discharge Point No. 002 to Hartley Slough at a point latitude 37° 15' 12" N and longitude 120° 31' 46" W. Hartley Slough is a water of the United States and is an ephemeral, effluent dominated water body that flows to Owens Creek and then to the San Joaquin River via a network of natural and artificial channels. As indicated in the Water Quality Control Plan for the

Sacramento and San Joaquin River Basins (Basin Plan), the designated beneficial uses of Hartley Slough, as a tributary of the San Joaquin River reach between Sack Dam and the Merced River, are: municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Known beneficial uses of Hartley Slough downstream of the discharge include REC-1, REC-2, AGR, WARM, and WILD. Due to the ephemeral nature of Hartley Slough, MUN may not be attainable in it downstream of the discharge. Nor is cold SPWN likely to occur.

3. Disinfected tertiary treated municipal wastewater is also discharged at Discharge Point No. 003 to the Merced Wildlife Management Area (WMA) at a point latitude 37° 14' 13" N and longitude 120° 31' 24" W. The WMA was created by the City of Merced many years ago as mitigation for loss of wetland created by the establishment of the Land Application Area (LAA). It is a constructed wetland area isolated from surrounding water of the United States by a series of levees and is an isolated, intrastate, and non-navigable water that is not subject to regulation under the Clean Water Act. Public access to the WMA is regulated and supervised by the California Department of Fish and Wildlife (DFW). The WMA is managed by the DFW to provide WARM, REC-1, REC-2, and WILD beneficial uses. During the hunting season, DFW limits public access to around ten people three days per week. The hunters can contact the water within the WMA, particularly during waterfowl hunting season. The WMA is posted to inform the visiting public that water within the WMA is treated effluent.
4. Disinfected tertiary treated municipal wastewater is also discharged at Discharge Point No. 004 to the Land Application Area (LAA) at a point latitude 37° 14' 41" N and longitude 120° 31' 22" W. The LAA consists of 580 acres where industrial waste (primarily food processing waste) was formerly discharged for land treatment. Currently, the LAA is planted with a winter crop of triticale (a hybrid of wheat and rye) or rye and a summer crop of sudan grass. Treated wastewater and biosolids from the Facility are applied agronomically to the LAA. The Basin Plan designates groundwater beneath the LAA (Discharge 004) as MUN, industrial service supply (IND), PRO, and AGR. The Discharger would like to expand the Land Application Area to include formerly abandoned Ponds 5 and 6. These ponds are directly south of the former sludge drying beds as shown the Site Location Map in Attachment B. The expanded area will be operated and maintained by the Discharger in a manner similar to the remainder of the LAA, except that biosolids will not be applied to the abandoned Ponds 5 and 6 area. Abandoned Ponds 5 and 6 consists of 90 acres and will increase the total area of the LAA to 670 acres. Public access to the area is restricted by two existing gates that limit access to the remainder of the LAA and WMA. Two existing groundwater monitoring wells are on the north and eastern ends of the abandoned Ponds 5 & 6 area.

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

Effluent limitations contained in the existing Order for discharges from Monitoring Location M-001 and representative monitoring data since the Facility upgraded to tertiary treatment are as follows:

**Table F-2. Historic Effluent Limitations and Monitoring Data**

Parameter	Units	Effluent Limitation			Monitoring Data (From May 2011 – To August 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Lowest Daily Discharge	Highest Daily Discharge	Long-Term Average Discharge
Flow	mgd	12.0	--	--	5.3	14	7.3
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	<2.0	6.5	2.2
TSS	mg/L	10	15	20	0.5	9.2	2.0
Settleable Solids	ml/L	0.1	--	0.2	<0.1	<0.1	<0.1
Aluminum	ug/L	--	--	750	<23	260	55
Cyanide	ug/L	3.8	--	9.5	<1	3.2 DNQ <sup>5</sup>	<sup>6</sup>
Dibromochloromethane	ug/L	0.41	--	0.89	<0.16	<0.16	<0.16
Dichlorobromomethane	ug/L	0.56	--	1.0	<0.16	<0.16	<0.16
Nitrite + Nitrate as N	mg/L	10	--	--	<1	18 <sup>7</sup>	6.6
Electrical Conductivity	umhos/cm	--	--	<sup>1</sup>	449	697	542
pH	standard units	--	--	6.5 - 8.5	7.08	8.2	7.53
Aluminum	ug/L	--	--	200 <sup>2</sup>	<23	260	55
Iron	ug/L	--	--	300 <sup>2</sup>	25 DNQ <sup>5</sup>	32	25.3
Turbidity	NTU	--	--	<sup>3</sup>	0.3	1.8	0.68
Total Coliform Organisms	MPN/100 mL	--	--	<sup>4</sup>	2	1,600 <sup>8</sup>	--
Total Chlorine Residual	mg/L	--	--	<sup>5</sup>	<0.01	<0.01	<0.01

1. The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water, or 1,000 umhos/cm, whichever is less. The flow-weighted average EC of the source water (up to 23 groundwater extraction wells) for 2013 was 280 umhos/cm.
2. Annual average.
3. Effluent turbidity shall not exceed the following: 2 NTU as a daily average, 5 NTU more than 5 percent of the time within a 24-hour period, and 10 NTU at any time.
4. Effluent total coliform organism concentrations shall not exceed the following: 2.2 MPN/100 mL as seven day median, 23 MPN/100 mL more than once in any 30-day period, and 240 MPN/100mL at any time.
5. DNQ = detected but not quantified.
6. All detections of cyanide were less than or equal to 3.2 DNQ ug/L.
7. Effluent nitrite + nitrate as N detections ranged from 11 mg/L to 18 mg/L in May 2011, which resulted in a an average monthly concentration of 14.9 mg/L. Since May 2011, the maximum monthly average nitrite +nitrate as N concentration was 8.2 mg/L.
8. See section II.D of this Fact Sheet for explanation of compliance history for total coliform organisms.

**Table F-3. Historic Groundwater Monitoring Data**

Parameter	Units	MCL	Summary of Detections (Third Quarter 2011 through 2013)							
			Upgradient (MW-1,MW-8,MW-11)		Sludge Beds (MW-5,MW-6,ME-7,MW-12)		WMA (MW-9,MW-10)		LAA (MW-2,MW-3,MW-4)	
			Min	Max	Min	Max	Min	Max	Min	Max
Electrical Conductivity	umhos/cm	900 <sup>1</sup> 1,600 <sup>2</sup> 2,200 <sup>3</sup>	520	1,900	670	2,200	700	1,500	460	1,400
Nitrite + Nitrate as N	mg/L	10	0.13	95	0.12	39	0.11	7.6	0.1	25
Total Coliform Organisms	MPN/100 mL	--	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ug/L	10 <sup>4</sup>	4.5	25	4.4	59	16	62	3.5	16

Parameter	Units	MCL	Summary of Detections (Third Quarter 2011 through 2013)							
			Upgradient (MW-1,MW-8,MW-11)		Sludge Beds (MW-5,MW-6,ME-7,MW-12)		WMA (MW-9,MW-10)		LAA (MW-2,MW-3,MW-4)	
			Min	Max	Min	Max	Min	Max	Min	Max
Ammonia as N	mg/L	--	0.11	5.4	0.087	0.88	0.16	3.7	ND	ND
Chloride	mg/L	250 <sup>1</sup> 500 <sup>2</sup> 600 <sup>3</sup>	12	87	14	130	49	120	11	110
Manganese	ug/L	50 <sup>5</sup>	23	1,900	18	10,000	560	2,700	1.8	510
Iron	ug/L	300 <sup>5</sup>	62	62	520	2,600	ND	ND	ND	ND
Sodium	mg/L	--	47	200	89	160	78	180	42	88
Sulfate	mg/L	250 <sup>1</sup> 500 <sup>2</sup> 600 <sup>3</sup>	23	270	28	350	38	160	19	150
Total Dissolved Solids	mg/L	500 <sup>1</sup> 1,000 <sup>2</sup> 1,500 <sup>3</sup>	300	1,400	100	1,500	430	5,500	310	860

1. Recommended Secondary Maximum Contaminant Level.
2. Upper Secondary Maximum Contaminant Level.
3. Short Term Secondary Maximum Contaminant Level.
4. Primary Maximum Contaminant Level.
5. Secondary Maximum Contaminant Level.

**D. Compliance Summary**

Dissolved oxygen and temperature measurements in Hartley Slough downstream of the discharge are frequently above their respective Receiving Water Limitations. These exceedances are likely attributed to backwater conditions that occur at the downstream surface water monitoring locations due to a diversion dam installed in Hartley Slough by a local farmer. The current downstream surface water monitoring locations (R-001D1 and R-001D2), where the dissolved oxygen and temperature were measured, were established to monitor the former Discharge Point No. 001. Treated effluent is currently discharged to Discharge Point No. 002. A new downstream surface water monitoring location (R-002D1) has been established in this Order to monitor Discharge Point No. 002. This new monitoring location is upstream of the influence of the backwater conditions from the diversion dam. As such, continued exceedances of the Receiving Water Limitations for dissolved oxygen and temperature are not anticipated in the future.

The Discharger was in violation of the effluent limitation for total coliform organisms in late January and early February 2013, May 2013, and June 2013. The Discharger investigated the cause of these violations and as a result has increased the frequency of ultraviolet light (UV) lamp cleaning and installed a flow diversion structure that completely isolates flow to the UV system in order to conduct a more thorough cleaning of the entire UV system. Since the implementation of the UV system cleaning, the discharge has been in compliance with the effluent limitations for total coliform organisms (effluent concentrations were less than 2 MPN/100 mL).

Order No. R5-2008-0027 requires continuous flow monitoring by meter for effluent discharged to Hartley Slough at monitoring location M-001. However, design and construction of the recent improvements at the Facility did not include a flow meter to continuously record effluent flow to Discharge Point No. 002. The flow rate of effluent discharged to Hartley Slough is calculated by subtracting the metered flow rate of effluent discharged to the LAA and WMA and the metered flow rate of effluent discharged back to the WWTF (i.e., landscape irrigation, fire suppression, and equipment cleaning) from the metered flow rate entering the UV disinfection system. The flow rate of effluent discharged to Hartley Slough is calculated automatically as part of the Supervisory Control and Data Acquisition (SCADA) system of the Facility. The effluent flow monitoring requirements of this Order have been revised to reflect the current practice of determining effluent flow to Hartley Slough is allowed.

**E. Planned Changes**

Based on demand, the Discharger has plans to complete two phased expansions at the Facility to increase the flow rate to 16.0 mgd and 20.0 mgd. The expansion to 16.0 mgd will consist of adding a fourth activated sludge basin, a third sludge digester, a solids holding tank, and additional active solar driers. The expansion to 20.0 mgd will consist of adding a fourth primary clarifier, a fifth activated sludge basin, and a fifth secondary clarifier. Effluent quality is anticipated to stay the same.

**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)**

CEQA compliance for the two phased expansions that may be completed under the term of this permit have previously been addressed by the City of Merced's environmental impact report that was certified on 18 December 2006 and explained in WDRs Order No. R5-2008-0027. In addition, under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

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

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

- a. Basin Plan. The Central Valley Water Board adopted a Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Hartley Slough, but does identify present and potential uses for the San Joaquin River reach between Sack Dam and the Merced River, to which Hartley Slough, via a network of natural and artificial channels, is tributary. In addition, the Basin Plan implements State Water Resources Control 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 Hartley Slough, the WMA, and LAA are as follows:

**Table F-4. Basin Plan Beneficial Uses**

Discharge Point	Receiving Water Name	Beneficial Use(s)
002	Hartley Slough	<p><u>Existing:</u>                      Agricultural Supply (AGR); Industrial Process Supply (PRO); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Migration of Aquatic Organisms (warm and cold) (MIGR); Spawning, Reproduction, and/or Early Development (warm) (SPWN); and Wildlife Habitat (WILD).</p> <p><u>Potential:</u>                      Municipal and domestic water supply (MUN); and Spawning, Reproduction, and/or Early Development (cold) (SPWN).</p>
003	Wildlife Management Area	Contact Water Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); and Wildlife Habitat (WILD)
004	Land Application Area (i.e., First Encountered Groundwater)	Municipal and domestic water supply (MUN); Agricultural Supply (AGR); Industrial Process Supply (PRO); and Industrial Service Supply (IND).

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 Resources Control 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 Resources Control Board adopted amendments to the SIP on 24 February 2005, which became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Resources Control Board established California's antidegradation policy in State Water Resources Control 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 Resources Control 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. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.
8. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a) of the Water Code, requires that *“the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective”*.

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Resources Control 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.** USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The State Water Resources Control Board Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated

with Industrial Activities Excluding Construction Activities, does not require facilities to obtain coverage if storm water is captured and treated and/or disposed of with the Facility’s NPDES permitted process wastewater or if storm water is disposed to evaporation ponds, percolation ponds, or combined sewer systems. The Discharger captures and treats all storm water that falls on-site. Therefore, coverage under the General Storm Water Permit is not required.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 USEPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as “...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR Part 130, et seq.).” The Basin Plan also states, “Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.” Hartley Slough is not listed as a WQLS in the 2008-2010 303(d) List of WQLSs. However, Hartley Slough is hydraulically connected to Deep Slough, Bear Creek, and the San Joaquin River between Bear Creek and Mud Slough. These segments are listed as WQLSs in the 2008-2010 303(d) List for arsenic, boron, chlorpyrifos, DDT, electrical conductivity, E. coli, Group A pesticides, pH, mercury, and unknown toxicity. This Order includes monitoring requirements for all of these pollutants, except E. coli and includes effluent limitations for electrical conductivity, chlorpyrifos, pH, and acute toxicity.
2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. Table F-5, below, identifies the 303(d) listings and the status of each TMDL from Discharge Point No. 002 to the San Joaquin River between Bear Creek and Mud Slough.

**Table F-5. 303 (d) List from Discharge Point No. 002 to San Joaquin River**

Pollutant	Potential Sources	Proposed TMDL Completion
Arsenic	Source Unknown	2021
Boron	Agriculture	2019
Chlorpyrifos	Agriculture	2007
DDT	Agriculture	2011
Electrical Conductivity	Agriculture	2019
E. Coli	Source Unknown	2021
Group A Pesticides	Agriculture	2011

Pollutant	Potential Sources	Proposed TMDL Completion
pH	Source Unknown	2021
Mercury	Resource Extraction	2012
Unknown Toxicity	Source Unknown	2019

- a. The Basin Plan includes waste load allocations for diazinon and chlorpyrifos applicable to all NPDES dischargers that discharge directly or indirectly to the lower San Joaquin River. This Order includes effluent limitations for these constituents to implement the waste load allocation.
- b. A selenium TMDL for the lower San Joaquin River was approved by the USEPA on 28 March 2002. However, there are no point sources of selenium in the lower San Joaquin River basin, so there is no waste load allocation. The Basin Plan includes water quality objectives for total selenium applicable to the San Joaquin River between Sack Dam and the mouth of the Merced River. This Order includes effluent and receiving water monitoring for California Toxics Rule constituents, which includes selenium.
- c. The Basin Plan contains a TMDL for salt and boron discharges into the lower San Joaquin River (*Control Program for Salt and Boron Discharges into the Lower San Joaquin River*)(Salt and Boron TMDL). It identifies existing NPDES point source dischargers as low priority. Compliance dates for low priority dischargers are contained in Table IV-4.3 of the Basin Plan. Low priority dischargers are not required to be in compliance during wet through dry years for 16 years and 20 years during critical years, starting from the effective date of the control program [28 July 2006]. At that time, the discharge must not exceed the water quality objectives for EC that apply to the San Joaquin River at Vernalis. Generally, discharges must not exceed an EC of 700 umhos/cm from 1 April through 31 August and 1,000 umhos/cm from 1 September through 31 March. The Salt and Boron TMDL is not applicable to this discharge. The 10 September 2004 Final Staff Report for the Salt and Boron TMDL indicates major point source discharges contributing salt and boron include municipal wastewater treatment facilities. However, the Report recognizes that most of the wastewater treatment facilities in the Lower San Joaquin River watershed discharge directly to land or the majority of their discharge is intercepted and used (for agriculture and wetland supply) prior to reaching the Lower San Joaquin River; the Merced Wastewater Treatment Facility discharge circumstances are consistent with this description. Much of the City’s discharge is directed to wetlands or used for irrigation immediately downstream of the Facility outfall. Specifically, the 2004 Final Staff Report states, “The Cities of Modesto and Turlock are the two major municipalities that discharge directly to surface waters that actually reach the [Lower San Joaquin River] LSJR.” The Report goes on to state that, “The TMDL establishes waste load allocations for the Cities of Turlock and Modesto, the two wastewater treatment plants that discharge directly to surface water that reach the LSJR (other plants discharge to surface waters that are diverted prior to reaching the LSJR).” For these reasons, the Salt and Boron TMDL is not applicable to the Discharger.

This Order includes a performance-based effluent limitation for EC of source plus 500 umhos/cm or 1,000 umhos/cm, whichever is less that is carried over from the previous Order. Further discussion of this effluent limitation is included in section IV.D.1 of this Fact Sheet.

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 IV.C.3 of this Fact Sheet.

#### **E. Other Plans, Polices and Regulations**

1. **Title 27, California Code of Regulations (CCR), section 20005 et seq (hereafter Title 27).**
  - a. 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. The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
    - i. The waste consists primarily of domestic sewage and treated effluent;
    - ii. The waste discharge requirements are consistent with water quality objectives; and
    - iii. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
  - b. The discharges authorized herein to the Land Application Area and Wildlife Management Area are exempt from the requirements of Title 27. The exemption, pursuant to Title 27, section 20090(h), is based on the Discharger using disinfected tertiary recycled water for irrigation in accordance with the Land Discharge Specifications and Recycled Water Specifications in this Order and the Water Recycling Criteria in Title 22, CCR, Division 4, Chapter 3.
  - c. The discharges authorized herein to the Land Application Area and Wildlife Management Area are exempt from the requirements of Title 27. The exemption, pursuant to Title 27, section 20090(b) is because they are discharges of wastewater to land and:
    - i. The Central Valley Water Board is issuing WDRs;
    - ii. The discharge is in compliance with the Basin Plan, and;
    - iii. The treated effluent does not need to be managed as a hazardous waste.
  - d. The discharge of biosolids to portions of the Land Application Area authorized herein is exempt from the requirements of title 27, pursuant to Title 27, section 20090(f), as a nonhazardous, decomposable waste used as a soil amendment pursuant to best management practices.

#### **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, which specifies that the Central Valley Water Board “will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.” This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA’s published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board’s “Policy for Application of Water Quality Objectives”)(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituent 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 report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at 40 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 Resources Control 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.
5. **Prohibition III.E (No discharge of waste classified as "hazardous").** This prohibition concerns a category of waste that is subject to full containment as prescribed by Title 23 and Title 27 of the CCR and, if discharged, has a high potential for creating a condition that would violate Prohibition III.C as well.

## 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 and Best Professional Judgment (BPJ) in accordance with 40 C.F.R. section 125.3.

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<sub>5</sub>), total suspended solids (TSS), and pH.

### 2. Applicable Technology-Based Effluent Limitations

- a. **BOD<sub>5</sub> 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<sub>5</sub> and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD<sub>5</sub> and TSS are based on the technical capability of the tertiary process. BOD<sub>5</sub> is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD<sub>5</sub> and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD<sub>5</sub> and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD<sub>5</sub> and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD<sub>5</sub> and TSS than the secondary standards currently prescribed; the 30-day average BOD<sub>5</sub> and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD<sub>5</sub> and TSS is included in this Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. 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. If 85 percent removal of BOD<sub>5</sub> and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order carries over from the previous Order, a limitation requiring an average of 90 percent removal of BOD<sub>5</sub> and TSS over each calendar month. This Order requires Water Quality Based Effluent Limitations (WQBELs) that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133. (See section IV.C.3.c of this Fact Sheet for the discussion on Pathogens which includes WQBELs for BOD<sub>5</sub> and TSS and BOD<sub>5</sub> and TSS removal.)

- b. **Flow.** The Facility was designed to provide a tertiary level of treatment for up to a design flow of 12.0 mgd. Therefore, this Order contains an average dry weather discharge flow effluent limit of 12.0 mgd. Based on demand, the Discharger may expand the Facility to treat flows up to 16.0 mgd and 20.0 mgd (see Provision VI.C.6.a).
- c. **pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units.

**Summary of Technology-based Effluent Limitations  
 Discharge Point No. 002 (Hartley Slough)**

**Table F-6. Summary of Technology-based Effluent Limitations**

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

- a. **Average Dry Weather Flow.** The monthly average dry weather discharge flow shall not exceed 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification (see Provision VI.C.6.a).
  - b. **Percent Removal.** The average monthly percent removal of 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 85 percent.
- 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 is discussed in section IV.C.3 of this Fact Sheet.

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

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

**2. Applicable Beneficial Uses and Water Quality Criteria and Objectives**

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

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

The federal CWA section 101(a)(2), states: *“it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.”* Federal Regulations, developed to implement the

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

- a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.
- 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 May 2011 through August 2013, which includes effluent and ambient background data submitted in SMRs.
- c. **Assimilative Capacity/Mixing Zone.** Based on the available information, the worst-case dilution for Hartley Slough is assumed to be zero at the point of discharge to provide protection for the receiving water beneficial uses. The impact of assuming zero dilution/assimilative capacity within the receiving water is that the effluent limitations are end-of-pipe limitations with no allowance for dilution within the receiving water.
- d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.
- e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP<sup>1</sup>, the CTR<sup>2</sup> and State Water Resources Control 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. The State Water Resources Control

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<sup>1</sup> 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.

<sup>2</sup> The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO<sub>3</sub>), 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.

Board, 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). Guidance on the selection of the appropriate ambient hardness was provided by the State Water Resources Control Board in Order No. WQ 2009-0008 (City of Davis).

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. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

- i. **Conducting the Reasonable Potential Analysis (RPA).** The SIP in Section 1.3 states, “The RWQCB shall...determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective.” Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the Maximum Effluent Concentration (MEC) and Maximum Ambient Background Concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.
  - (a) The SIP requires water quality-based effluent limitations (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<sup>1</sup>. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the reasonable

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<sup>1</sup> The pollutant must also be detected in the effluent.

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<sup>1</sup> developed procedures for calculating the effluent concentration allowance (ECA)<sup>2</sup> for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR<sup>3</sup>, is as follows:

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

Where:

H = hardness (as CaCO<sub>3</sub>)<sup>4</sup>

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:

$$\text{ECA} = C \text{ (when } C \leq B) \quad (\text{Equation 2})$$

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 40 CFR § 131.38(b)(2).

<sup>4</sup> For this discussion, all hardness values are in mg/L as CaCO<sub>3</sub>.

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<sup>2</sup>. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)<sup>3</sup>. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 94 mg/L to 120 mg/L, based on 8 samples from July 2011 to April 2013. The upstream receiving water hardness varied from 13 mg/L to 200 mg/L, based on 26 samples from May 2011 to August 2013, and the downstream receiving water hardness varied from 29 mg/L to 150 mg/L, during the same period. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 94 mg/L. As demonstrated in the example shown in Table F-7, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 13 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

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<sup>1</sup> The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e.  $C \leq B$ )

<sup>2</sup> 2006 Study, p. 5700

<sup>3</sup> 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.

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.

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

Where:

$C_{MIX}$  = Mixed concentration (e.g. metals or hardness)

$C_{RW}$  = Upstream receiving water concentration

$C_{Eff}$  = Effluent concentration

EF = Effluent Fraction

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

**Table F-7. Copper ECA Evaluation**

<b>Lowest Observed Effluent Hardness</b>		<b>94 mg/L (as CaCO<sub>3</sub>)</b>			
<b>Lowest Observed Upstream Receiving Water Hardness</b>		<b>13 mg/L (as CaCO<sub>3</sub>)</b>			
<b>Highest Assumed Upstream Receiving Water Copper Concentration</b>		<b>1.6 µg/L<sup>1</sup></b>			
<b>Copper ECA<sub>chronic</sub><sup>2</sup></b>		<b>8.9 µg/L</b>			
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Effluent Fraction<sup>6</sup></b>		<b>Hardness<sup>3</sup> (mg/L)</b>	<b>CTR Criteria<sup>4</sup> (µg/L)</b>	<b>Copper<sup>5</sup> (µg/L)</b>	<b>Complies with CTR Criteria?</b>
High Flow Low Flow	1%	13.8	1.7	1.7	<b>Yes</b>
	5%	17.1	2.1	2.0	<b>Yes</b>
	15%	25.2	2.9	2.7	<b>Yes</b>
	25%	33.3	3.6	3.4	<b>Yes</b>
	50%	53.5	5.5	5.2	<b>Yes</b>
	75%	73.8	7.2	7.0	<b>Yes</b>
	100%	94.0	8.9	8.8	<b>Yes</b>

<sup>1</sup> Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 13 mg/L.

<sup>2</sup> ECA calculated using Equation 1 for chronic criterion at a hardness of 94 mg/L.

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

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

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

<sup>1</sup> 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-7 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

<sup>6</sup> 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).

As discussed in the above example for copper, an assumption was made that the background receiving water metal concentration did not exceed the CTR criteria. This assumption is correct for all Concave Down metals except for copper and zinc. In the case of copper, the receiving water at times contains copper concentrations that exceed the water quality criteria associated with the hardness condition upstream of the discharge. The 2006 study procedures remain applicable under these conditions. The discharge cannot cause or contribute to a violation of water quality criteria/objectives in the receiving water. Although metals concentrations downstream of the discharge exceed CTR criteria, the cause of the exceedance is not due to the discharge, it is due to the elevated metals concentrations upstream of the discharge. Implementing the procedures of the 2006 study does not result in an increase in toxicity downstream of the discharge, and in fact reduces the amount of toxicity already present in the receiving water. This is demonstrated in the example below for copper (see Table F-8).

As shown in Table F-8 for copper, prior to the discharge the copper has been observed to exceed water quality criteria by up to 249%. When the receiving water contains some fraction of effluent, the percent exceedance is reduced. The greater the amount of effluent in the receiving water, the lower the percent exceedance, until a fully compliant state is achieved when the effluent constitutes the entire flow. The effluent limitation associated with copper, therefore, was sufficient to assure that the discharge never causes or contributes to a violation of a water quality criterion, and in fact reduces the amount of toxicity already present in the receiving water.

**Table F-8. Copper ECA Evaluation**

		<b>Lowest Observed Effluent Hardness</b>			<b>94 mg/L (as CaCO<sub>3</sub>)</b>
		<b>Lowest Observed Upstream Receiving Water Hardness</b>			<b>13 mg/L (as CaCO<sub>3</sub>)</b>
		<b>Highest Observed Upstream Receiving Water Copper Concentration</b>			<b>5.7 µg/L</b>
		<b>Copper ECA<sub>chronic</sub><sup>1</sup></b>			<b>8.9 µg/L</b>
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Effluent Fraction<sup>5</sup></b>		<b>Hardness<sup>2</sup> (mg/L)</b>	<b>CTR Criteria<sup>3</sup> (µg/L)</b>	<b>Copper<sup>4</sup> (µg/L)</b>	<b>Percent Exceeding Criterion</b>
High Flow  Low Flow	0%	13.0	1.6	5.7	249%
	1%	13.8	1.7	5.7	234%
	5%	17.1	2.1	5.9	185%
	15%	25.2	2.9	6.2	115%
	25%	33.3	3.6	6.5	78%
	50%	53.5	5.5	7.3	33%
	75%	73.8	7.2	8.1	12%
	100%	94.0	8.9	8.8	0%

<sup>1</sup> ECA calculated using Equation 1 for chronic criterion at a hardness of 94 mg/L.

<sup>2</sup> Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.

- 3 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
- 4 Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.
- 5 The effluent fraction ranges from 0% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

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

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-9).

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

Where:

- m, b = criterion specific constants (from CTR) (Equation 4)
- H<sub>e</sub> = lowest observed effluent hardness
- H<sub>rw</sub> = 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-9, below. As previously mentioned, the lowest effluent hardness is 94 mg/L, while the upstream receiving water hardness ranged from 13 mg/L to 200 mg/L, and the downstream receiving water hardness ranged from 29 mg/L to 150 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 13 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-9, for lead.

**Table F-9. Lead ECA Evaluation**

		<b>Lowest Observed Effluent Hardness</b>			<b>94 mg/L</b>
		<b>Reasonable Worst-case Upstream Receiving Water Hardness</b>			<b>13 mg/L</b>
		<b>Reasonable Worst-case Upstream Receiving Water Lead Concentration</b>			<b>0.24 µg/L<sup>1</sup></b>
		<b>Lead ECA<sub>chronic</sub><sup>2</sup></b>			<b>2.12 µg/L</b>
		<b>Fully Mixed Downstream Ambient Concentration</b>			
	<b>Effluent Fraction<sup>6</sup></b>	<b>Hardness<sup>3</sup> (mg/L) (as CaCO<sub>3</sub>)</b>	<b>CTR Criteria<sup>4</sup> (µg/L)</b>	<b>Lead<sup>5</sup> (µg/L)</b>	<b>Complies with CTR Criteria?</b>
High Flow  Low Flow	1%	13.8	0.3	0.3	<b>Yes</b>
	5%	17.1	0.3	0.3	<b>Yes</b>
	15%	25.2	0.5	0.5	<b>Yes</b>
	25%	33.3	0.8	0.7	<b>Yes</b>
	50%	53.5	1.4	1.2	<b>Yes</b>
	75%	73.8	2.2	1.6	<b>Yes</b>
	100%	94.0	2.9	2.1	<b>Yes</b>

- <sup>1</sup> Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 13 mg/L.
- <sup>2</sup> ECA calculated using Equation 4 for chronic criteria.
- <sup>3</sup> Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.
- <sup>4</sup> Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
- <sup>5</sup> Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
- <sup>6</sup> 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).

As discussed above, the receiving water at times contains concentrations of lead that exceed water quality criteria associated with the hardness condition previous to the discharge. The 2006 study procedures remain applicable under these conditions. The discharge cannot cause or contribute to a violation of water quality criteria/objectives in the receiving water. Although metals concentrations downstream of the discharge exceed CTR criteria, the cause of the exceedance is not due to the discharge, it is due to the elevated metals concentrations upstream of the discharge. Implementing the procedures of the 2006 study does not result in an increase in toxicity downstream of the discharge, and in fact reduces the amount of toxicity already present in the receiving water. This is demonstrated in the example below for lead (see Table F-10).

As shown in Table F-10 for lead, prior to the discharge the lead has been observed to exceed water quality criteria by up to 449%. When the receiving water contains some fraction of effluent, the percent exceedance is reduced. The greater the amount of effluent in the receiving water, the lower the percent

exceedance, until a fully compliant state is achieved when the effluent constitutes the entire flow. The effluent limitation associated with copper, therefore, was sufficient to assure that the discharge never causes or contributes to a violation of a water quality criterion, and in fact reduces the amount of toxicity already present in the receiving water.

**Table F-10. Lead ECA Evaluation**

<b>Lowest Observed Effluent Hardness</b>		<b>94 mg/L (as CaCO<sub>3</sub>)</b>			
<b>Lowest Observed Upstream Receiving Water Hardness</b>		<b>13 mg/L (as CaCO<sub>3</sub>)</b>			
<b>Highest Observed Upstream Receiving Water Lead Concentration</b>		<b>1.3 µg/L</b>			
<b>Lead ECA<sub>chronic</sub><sup>1</sup></b>		<b>2.1 µg/L</b>			
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Effluent Fraction<sup>5</sup></b>		<b>Hardness<sup>2</sup> (mg/L)</b>	<b>CTR Criteria<sup>3</sup> (µg/L)</b>	<b>Lead<sup>4</sup> (µg/L)</b>	<b>Percent Exceeding Criterion</b>
High Flow  Low Flow	0%	13.0	0.2	1.3	449%
	1%	13.8	0.3	1.3	411%
	5%	17.1	0.3	1.3	301%
	15%	25.2	0.5	1.4	159%
	25%	33.3	0.8	1.5	92%
	50%	53.5	1.4	1.7	19%
	75%	73.8	2.2	1.9	0%
	100%	94.0	2.9	2.1	0%

- <sup>1</sup> ECA calculated using Equation 1 for chronic criterion at a hardness of 13 mg/L.
- <sup>2</sup> Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
- <sup>3</sup> Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
- <sup>4</sup> Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.
- <sup>5</sup> The effluent fraction ranges from 0% 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 ECA used in this Order.

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

CTR Metals	ECA (µg/L, total recoverable) <sup>1</sup>	
	acute	chronic
Copper	13	8.9
Chromium III	1700	200
Cadmium	3.6	2.3
Lead	55	2.1
Nickel	450	50.
Silver	1.2	--
Zinc	110	110

<sup>1</sup> Metal criteria rounded to two significant figures in accordance with the CTR.

**3. Determining the Need for WQBELs**

- a. **Constituents with Total Maximum Daily Limitation (TMDL).** The Central Valley Water Board developed WQBELs for diazinon and chlorpyrifos that have available wasteload allocations under a Total Maximum Daily Load (TMDL). The Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos in the Lower San Joaquin and amended the Basin Plan to include water quality objectives and waste load allocations. The Basin Plan amendment was adopted by the Central Valley Water board on 21 October 2005 and approved by the State Water Resources Control Board on 2 May 2006. The Basin Plan amendment was approved by the Office of Administration Law on 30 June 2006 and is now State Law. The amendment was approved by US E.P.A and went into effect on 20 December 2006. The effluent limitations for these pollutants were established regardless of whether or not there is reasonable potential for the pollutants to be present in the discharge at levels that would cause or contribute to a violation of water quality standards. The Central Valley Water Board developed water quality-based effluent limitations for these pollutants pursuant to 40 C.F.R. section 122.44(d)(1)(vii), which does not require or contemplate a reasonable potential analysis. Similarly, the SIP at Section 1.3 recognizes that reasonable potential analysis is not appropriate if a TMDL has been developed.

This Order contains a WQBEL for diazinon and chlorpyrifos based on the Basin Plan amendment that states, *"The Waste Load Allocations (WLA) for all NPDES-permitted dischargers...shall not exceed the sum (S) of one (1) as defined below.*

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

$C_D$  = diazinon concentration in ug/L of point source discharge...

$C_C$  = chlorpyrifos concentration in ug/L of point source discharge...

$WQO_D$  = acute or chronic diazinon water quality objective in ug/L...

$WQO_C$  = acute or chronic chlorpyrifos water quality objective in ug/L.

*Available samples collected within the application averaging period for water quality objectives 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."*

Average monthly effluent limitations and maximum daily effluent limitations have been calculated using the procedures in Section 1.4 of the SIP and consistent with the TMDL waste load allocation resulting in the following effluent limitations for diazinon and chlorpyrifos:

#### Average Monthly Effluent Limitation

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

$C_{D-avg}$  = average monthly diazinon effluent concentration in ug/L.

$C_{C-avg}$  = average monthly chlorpyrifos effluent concentration in ug/L.

#### Maximum Daily Effluent Limitation

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

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

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

As required by 40 C.F.R. section 122.44(d)(1)(vii), the Central Valley Water Board shall ensure there are WQBELs for diazinon and chlorpyrifos in the WDR's that are consistent with the assumptions and requirements of the available wasteload allocation. Based on the water quality monitoring done at the time of the TMDL adoption, which set the wasteload allocation at the level necessary to attain water quality standards, the Central Valley Water Board has determined that the WQBEL is consistent with the assumptions of the TMDL. Similarly, compliance with the effluent limitation will satisfy the requirements of the TMDL.

As indicated in section III.D.2.c. of this Fact Sheet, the Salt and Boron TMDL is not applicable to this discharge.

- b. **Constituents with No Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water); 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. Waste Discharge Requirements Order No. R5-2008-0027 included effluent limitations for aluminum, cyanide, dibromochloromethane, dichlorobromomethane, iron, and total residual chlorine. However, reasonable potential no longer exists for these constituents since UV disinfection has replaced chlorine disinfection and tertiary filters have been added to the treatment train. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of the Fact Sheet).

**i. Aluminum**

(a) **WQO.** Criteria for aluminum include the following:

**Table F-12. Aluminum Criteria**

Source	Criteria (ug/L)
California Primary MCL	1,000
California Secondary MCL	200
USEPA Freshwater Aquatic Life Criteria (Chronic 4-day Average)	87
USEPA Freshwater Aquatic Life Criteria (Acute 1-hour Average)	750

The most stringent of these criteria is the chronic aquatic life criterion of 87 ug/L. However, footnote L of Table 2 on page 19 of the National Recommended Ambient Water Quality Criteria Correction (April 1999), indicates that the chronic aquatic life criterion is based on studies conducted under specific receiving water conditions with a low pH (6.5 to 6.6 pH units) and low hardness (<10 mg/L as CaCO<sub>3</sub>). In the case of the Hartley Slough, the average downstream pH and hardness (sample location R-001D2) were 7.4 and 78 mg/L, respectively. Therefore, the application of the stringent chronic criterion is not appropriate. By tributary rule, Hartley Slough has the designated beneficial use of MUN and the applicable criterion would be the secondary MCL of 200 ug/L.

(b) **RPA Results.** The effluent aluminum concentrations are shown in the table below.

**Table F-13. Effluent Aluminum Data**

Date	Aluminum (ug/L)
5/31/11	38 DNQ
6/3/11	24 DNQ
7/5/11	<23
8/1/11	43 DNQ
9/1/11	31 DNQ
10/4/11	<23
11/3/11	23 DNQ
12/1/11	37 DNQ
2011 Average = 27	

Date	Aluminum (ug/L)
1/3/12	29 DNQ
2/2/12	<23
3/1/12	23 DNQ
3/15/12	180
4/5/12	26 DNQ
5/4/12	33 DNQ
6/1/12	31 DNQ
7/6/12	38 DNQ
8/10/12	34 DNQ
9/5/12	29DNQ
10/5/12	160
11/2/12	<23
12/3/12	28 DNQ
2012 Average = 49	

Date	Aluminum (ug/L)
1/3/13	<23
2/5/13	33 DNQ
3/4/13	250
4/1/13	26 DNQ
5/3/13	<23
6/4/13	260
7/2/13	30 DNQ
2013 Average = 89	

The highest annual average effluent aluminum concentration was 89 ug/L, which is less than the secondary MCL of 200 ug/L. Aluminum was detected at a maximum concentration of 260 ug/L in the effluent on 4 June 2013, which is less than the acute criterion of 750 ug/L. Receiving water samples were not analyzed for aluminum. Reasonable potential does not exist.

**ii. Cyanide**

- (a) **WQO.** The CTR includes criteria for the protection of freshwater aquatic life for cyanide of 5.2 ug/L [chronic criteria (4-day average)] and 22 ug/L [acute criteria (1-hour average)].
- (b) **RPA Results.** Effluent cyanide data are shown in the following table:

**Table F-14. Effluent Cyanide Data**

Date	Cyanide (ug/L)	Date	Cyanide (ug/L)	Date	Cyanide (ug/L)
5/3/11	<3	1/3/12	<3	1/3/13	1.7 DNQ
6/3/11	<3	2/2/12	<3	2/5/13	<1
7/5/11	<3	3/1/12	1.4 DNQ	3/4/13	1.8 DNQ
8/1/11	<3	3/15/12	<1	4/1/13	3.1 DNQ
9/1/11	<3	4/5/12	2.1 DNQ	5/3/13	<1.7
10/4/11	43	5/4/12	1.4 DNQ	6/4/13	3.2 DNQ
10/13/11	<3	6/1/12	5.3	7/2/13	<2
11/3/11	<3	6/9/12	1.7 DNQ	8/9/13	2.5 DNQ
12/1/11	<3	7/6/12	<1		
		8/10/12	<1		
		8/30/12	1.2 DNQ		
		9/5/12	2.2 DNQ		
		10/18/12	1.5 DNQ		
		11/2/12	1 DNQ		
		12/3/12	2.2 DNQ		

Cyanide was detected in the effluent at a concentration of 43 ug/L on 4 October 2011. This detection is greater than the CTR chronic criteria (4-day average) and the CTR acute criteria (1-hour average) to protect freshwater aquatic life of 5.2 ug/L and 22 ug/L, respectively. However, this detection is considered unrepresentative of the Facility effluent and inappropriate for RP determination for the following reasons:

- The detection is considered an outlier using the Grubb’s T-test,
- The detection is significantly higher than the other effluent detections when chlorine was still being used for disinfection,
- According to Giudice, Jorgenson, and Bryan<sup>1</sup>, “[t]he approved EPA methods used to measure CN in wastewater effluent are prone to numerous interferences that are unpredictable and difficult to mitigate,”
- Acute toxicity samples collected on 7 and 10 October 2011, resulted in 100% survival of fathead minnows, and

<sup>1</sup> Giudice, M.S., Ben D., Brant Jorgenson, and Michael Bryan, Ph.D. *Problems Associated with Using Current EPA Approved Cyanide Analytical Methods for Determining Municipal Wastewater Treatment Plant NPDES Permit Compliance*. 2011.

- Chronic toxicity samples collected on 3, 5, 7, and 10 October 2011, resulted in a TUC = 1 for each species tested.

The next highest detection of cyanide was at a concentration of 5.3 ug/L on 1 June 2012; however, cyanide was also detected in the corresponding method blank at a concentration of 1.6 ug/L. As such, this data point is also considered unrepresentative of the Facility effluent and inappropriate for Reasonable Potential determination. Therefore, the maximum effluent concentration (MEC) was 3.2 DNQ. Cyanide was not detected at or above a method detection limit of 1.0 ug/L in the one sample collected in May 2012 from the receiving water. Reasonable potential does not exist.

**iii. Dibromochloromethane.**

- WQO.** The CTR includes a criterion of 0.41 ug/L (30-day average) for dibromochloromethane for the protection of human health for water from which both water and organisms are consumed.
- RPA Results.** Dibromochloromethane was not detected at or above the method detection limit of 0.16 ug/L in any of the 29 effluent or one upstream receiving water samples. Reasonable potential does not exist.

**iv. Dichlorobromomethane.**

- WQO.** The CTR includes a criterion of 0.56 ug/L (30-day average) for dichlorobromomethane for the protection of human health for water from which both water and organisms are consumed.
- RPA Results.** Dichlorobromomethane was not detected at or above the method detection limits of 0.067 ug/L or 0.16 ug/L in any of the 29 effluent or one upstream receiving water samples. Reasonable potential does not exist.

**v. Iron**

- WQO.** DPH has adopted a Secondary Maximum Contaminant Level for the protection of human health for iron of 300 ug/L.
- RPA Results.** The highest detection of iron in the six samples collected from the effluent was 32 ug/L on 5 October 2012. Upstream receiving water samples were not analyzed for iron. Reasonable potential does not exist.

**vi. Total Residual Chlorine**

- WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.
- RPA Results.** UV light has replaced chlorine for disinfection at the WWTF. However, approximately 15-20 gallons of chlorine per day is injected into the treated effluent return flow that is used on-site for equipment cleaning. Five gallons of chlorine are used when UV channels are cleaned and up to 25 gallons of chlorine are used when the entire UV system is taken off-line for cleaning. All of the chlorine wash water is conveyed back to the headworks of the Facility. Total residual chlorine was not detected at or

above the method detection limit of 0.01 mg/L in the 823 effluent samples and the 94 upstream receiving water samples (even when cleaning activities were conducted on the day of sample collection). Reasonable potential does not exist.

- c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia as nitrogen, copper, and nitrate as nitrogen. 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. 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 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 evaluated.

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 *Oncorhynchus* (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.

Central Valley Water Board staff could not find any documentation that recorded mussel species present in Hartley Slough. The Central Valley Water Board is currently in the process of determining the best way to evaluate receiving waters within the Central Valley for the presence of mussels. As a result, the site-specific criteria for waters where mussels are not present were used. However, because the San Joaquin River has a potential beneficial use of SPWN for salmon and steelhead, the recommended criteria for waters where salmonids and early life stages are present were used.

The acute criteria were calculated from the maximum permitted effluent pH and maximum observed effluent temperature. The resulting acute criterion is 2.03 mg/L (as N). The chronic criteria were calculated for each reported paired downstream receiving water pH and temperature. The resulting 30-day CCC is 1.93 mg/L (as N).

- (b) **RPA Results.** 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.

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

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

- (c) **WQBELs.** The Central Valley Water Board calculated WQBELs in accordance with SIP procedures; however, the Central Valley Water Board is not obligated to use the SIP procedures for non-CTR constituents. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the

30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for ammonia as nitrogen of 1.01 mg/L and 2.03 mg/L, respectively, based on the acute criteria.

- (d) **Plant Performance and Attainability.** Since the tertiary treatment upgrades were certified in May 2011, effluent concentrations for ammonia as nitrogen have predominately been non-detect (<0.05 mg/L). However, ammonia as nitrogen was detected multiple times in the effluent during the beginning of 2013 with a maximum detection of 6.86 mg/L on 12 March 2013. The City attributes these detections to start-up and testing of the newly built solids processing equipment and are not representative of normal operation. Since the end of March 2013, ammonia as nitrogen has only been detected five times (ranging from 0.07 mg/L to 0.12 mg/L) in the effluent. All other samples collected on a daily basis were non-detect (<0.05 mg/L). Based on the recent data since March 2013, it appears the Discharger should be able to comply with the effluent limitations and a separate time schedule order is not necessary.

**ii. Copper**

- (a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for copper. Section 3.1 of the SIP contains requirements for conducting the RPA for CTR constituents. Step 1 of the RPA requires that CTR criteria be adjusted for hardness, as applicable. In this case, the minimum observed effluent hardness was used to adjust the CTR criteria for copper when comparing the MEC to the criteria and the minimum observed receiving water hardness was used when comparing the maximum background receiving water copper concentrations to the criteria. The effluent and upstream receiving water hardness data are shown in the table below:

**Table F-15. Effluent and Upstream Receiving Water Hardness**

Date	Effluent Hardness (mg/L)	Date	Upstream Receiving Water Hardness (mg/L)	Date	Upstream Receiving Water Hardness (mg/L)	Date	Upstream Receiving Water Hardness (mg/L)
7/5/11	120	5/2/11	32	3/5/12	140	12/18/12	39
1/3/12	95	6/6/11	23	4/2/12	84	3/5/13	200
3/15/12	100	7/5/11	32	5/1/12	34	5/7/13	34
7/6/12	120	8/2/11	27	6/12/12	21	6/4/13	63
8/30/12	120	9/6/11	23	7/3/12	27	7/1/13	37
10/5/12	110	10/3/11	13	8/7/12	26	7/9/13	33
1/3/13	96	11/7/11	26	9/4/12	19	7/23/13	48
4/1/13	94	1/23/12	24	10/2/12	100	8/6/13	23
				11/6/12	88	8/20/13	31

Using the default conversion factors and worst-case measured hardness of the effluent (94 mg/L) and receiving water (13 mg/L), as described in section IV.C.2.e. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the effluent are 13.2 ug/L and 8.9 ug/L, respectively for total recoverable. The applicable acute (1-hour average) and chronic (4-day average) criteria for the upstream receiving water are 2.1 ug/L and 1.6 ug/L, respectively for total recoverable.

- (b) **RPA Results.** Available copper data consist of three effluent samples with detections ranging from 1.8 ug/L to 2.9 ug/L and five upstream receiving water samples with detection ranging from 3.3 ug/L to 5.7 ug/L. The MEC was 2.9 ug/L and the maximum upstream receiving water sample (B) was 5.7 ug/L. The MEC was compared to the CTR chronic criterion to protect freshwater aquatic life of 8.9 ug/L (based on a minimum effluent hardness of 94 mg/L). In addition, B was compared to the CTR chronic criterion to protect freshwater aquatic life of 1.6 ug/L (based on a minimum receiving water hardness of 13 mg/L). Reasonable potential exists based on receiving water exceeding the criterion and detections in the effluent. In addition, the paired hardness and copper data of the receiving water were compared to the corresponding CTR chronic criterion to protect freshwater aquatic life. As a result, reasonable potential exists for four of the five data pairs since the receiving water copper concentration was greater than the criterion.
- (c) **WQBELs.** Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for copper. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for copper of 6.5 ug/L and 13. ug/L, respectively, based on the CTR criteria for protection of freshwater aquatic life.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 2.9 ug/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

### iii. Nitrate and Nitrite

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

USEPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate (as nitrogen), USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, if untreated, will be harmful to fish and will violate the Basin Plan's narrative toxicity objective. This Order, therefore, requires removal of ammonia (i.e., nitrification). Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the

primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia). Reasonable potential for nitrate and nitrite therefore exists and WQBELs are required.

Federal regulations at 40 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. Nitrate and nitrite are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification/denitrification to remove ammonia, nitrite, and nitrate from the waste stream. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the primary MCL would violate the Basin Plan narrative chemical constituent's objective. Although the Discharger denitrifies the discharge, inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged

and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBELs are required.

- (c) **WQBELs.** This Order contains a final AMEL for nitrate plus nitrite of 10 mg/L (total as nitrogen), based on the Primary MCL. This effluent limitation is included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.
- (d) **Plant Performance and Attainability.** Nitrate as nitrogen detections ranged from 11 mg/L to 18 mg/L in May and June 2011. However, since early June 2011, detections of nitrate as nitrogen in the effluent have not exceeded 10 mg/L, except on 15 March 2013 (14 mg/L) and 3 April 2013 (12 mg/L). The detections of nitrate as nitrogen above 10 mg/L in March and April 2013 are also attributed to the start-up and testing of the newly built solids processing equipment (similar to ammonia as nitrogen detections during the same time period) and are not representative of normal operation. It appears the Discharger should be able to comply with the effluent limitations and a separate time schedule order is not necessary.

#### iv. Pathogens

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

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

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

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

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

The beneficial uses of Hartley Slough include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. 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, when coagulation is used, 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 (measured at the effluent of the filtration unit). This Order also includes operational specifications for turbidity, when coagulation is not used, of 5 NTU for more than 15 minutes and never more than 10 NTU (measured at the influent of the filtration unit) and never more than 2 NTU anytime (measured at the effluent of the filtration unit).

This Order contains effluent limitations for BOD<sub>5</sub>, total coliform organisms, and TSS and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements.

Final WQBELs for BOD<sub>5</sub> 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<sub>5</sub> is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD<sub>5</sub> and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameters for wastewater treatment plants are the daily BOD<sub>5</sub> 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<sub>5</sub> and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD<sub>5</sub> and TSS of 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD<sub>5</sub> and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. This Order carries over from the previous Order a limitation requiring an average of 90 percent removal of BOD<sub>5</sub> and TSS over each calendar month.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the effluent concentrations of total coliform organisms are routinely less than 2 MPN/100 mL, which is less than the applicable WQBELs. Section II.D of this Fact Sheet summarizes the Discharges compliance with effluent limitations of the current Order. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

**v. 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.

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

The Facility is a POTW that treats domestic wastewater. Based on 832 samples taken from May 2011 to August 2013, the maximum pH reported was 8.2 and the minimum was 7.08. 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 effluent pH ranged from 7.08 to 8.2, which is within the range of the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible

**4. WQBEL Calculations**

- a. This Order includes WQBELs for ammonia as nitrogen, BOD<sub>5</sub>, TSS, pH, nitrate + nitrite as N, copper, total coliform organisms, chlorpyrifos, and diazinon. 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<sub>acute</sub> and LTA<sub>chronic</sub>) 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.

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

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

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

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 No. 002 (Hartley Slough)**

**Table F-16. Summary of Water Quality-Based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
pH	standard units	--	--	--	6.5	8.5
Ammonia Nitrogen (as N)	mg/L	1.01	--	2.03	--	--
Nitrate plus Nitrite as Nitrogen	mg/L	10.	--	--	--	--
Copper, Total Recoverable	ug/L	6.5	--	13.	--	--

<sup>1.</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).

<sup>2.</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).

<sup>3.</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- a. **Percent Removal.** The average monthly percent removal of 5-day biological oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 percent.
- b. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/100 mL, at any time.
- c. **Chlorpyrifos and Diazinon.** Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of (1.0) as defined below:
  - i. Average Monthly Effluent Limitation

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

$C_{D-avg}$  = average monthly diazinon effluent concentration in ug/L.

$C_{C-avg}$  = average monthly chlorpyrifos effluent concentration in ug/L.

ii. Maximum Daily Effluent Limitation

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

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

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

**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. The Basin Plan also states that, "...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...".

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

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in

toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." 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). Chronic toxicity tests on the effluent were performed on a quarterly basis. The TUc for each quarterly chronic toxicity test was 1.0 except for April 2012 (*Selenastrum* density), July 2012 (*Ceriodaphnia* reproduction), March 2013 (*Selenastrum* density and *Ceriodaphnia* reproduction) and April 2013 (*Selenastrum* density). However, the TUc's that were greater than 1.0 in April 2012, July 2012, March 2013 (*Selenastrum* density) and April 2013 were attributed to the receiving water that was used as a control and diluent to be toxic and seasonally biostimulatory and not a result of the effluent being toxic. Accelerated monitoring was conducted in response to the March 2013 *Ceriodaphnia* reproduction test. All four of the accelerated monitoring events had a TUc of 1.0 for *Ceriodaphnia* reproduction and the Discharger resumed its regular quarterly chronic toxicity testing schedule.

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, Special Provision VI.C.2.a includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated. The Discharger submitted a TRE Work Plan in June 2008.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region<sup>1</sup> that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Resources Control Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Resources Control Board states the following in WQO 2003-012, "In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works

<sup>1</sup> In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

*that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.”* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan’s narrative toxicity objective, as allowed under 40 CFR 122.44(k).

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 Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE work plan. 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. Performance-based Effluent Limitations**

##### **1. Applicable Performance-based Effluent Limitation**

- a. **Electrical Conductivity (EC).** The current permit includes an effluent limitation for EC that states, “The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water, or 1,000 umhos/cm, whichever is less.”

Although the Salt and Boron TMDL is not applicable to this discharge, this Order includes a performance based EC effluent limitation for discharge to Hartley Slough, the WMA, and the LAA in order to satisfy anti-backsliding requirements and the antidegradation policy. However, the language is modified from the existing permit to be more consistent with recent permits and to clarify compliance determination with the effluent limitation. The modified language is as follows:

The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.

#### **E. 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 were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1.e of this Order.

## **2. Averaging Periods for Effluent Limitations**

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *“First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge’s potential for causing acute toxic effects would be missed.”* (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia as nitrogen, copper, chlorpyrifos, and diazinon 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 pH and total coliform organisms, 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.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and 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 (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

## **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 the previous Order, with the exception of effluent limitations for aluminum, cyanide, dibromochloromethane, dichlorobromomethane, iron, total residual chlorine, settleable solids, and turbidity. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2008-0027. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

- a. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, effluent and receiving water monitoring data collected between May 2011 and August 2013 indicates that aluminum, cyanide, dibromochloromethane, dichlorobromomethane, iron, total residual chlorine, and settleable solids in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the applicable water quality objectives in the receiving water. Therefore, the effluent limitations for aluminum, cyanide, dibromochloromethane, dichlorobromomethane, iron, total residual chlorine, and settleable solids have not been continued. Removal of the effluent limitations meets the exceptions to backsliding in CWA section 402(o)(2).

- b. **Turbidity.** Order No. R5-2008-0027 included an effluent limitation for turbidity. The prior limitation was solely an operational check to ensure the treatment system was functioning properly and could meet effluent limitations for coliform. The prior effluent limitation was not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a WQBEL.

This Order contains operational turbidity specifications to be met in lieu of an effluent limitation and does not include an effluent limitation for turbidity. However, the operational specifications in this Order are equivalent limitations that are not less stringent, and therefore do not constitute backsliding.

#### 4. Satisfaction of Antidegradation Policy

- a. **Surface Water.** This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

The revised operational specifications for turbidity are the same as the effluent limitation in Order No. R5-2008-0027. This revision is consistent with State regulations implementing recycled water requirements. The revision in the turbidity limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution No. 68-16 because this Order imposes equivalent or more stringent requirements than Order No. R5-2008-0027 and, does not allow degradation.

- b. **Groundwater.** State Water Resources Control Board Resolution No. 68-16 prohibits degradation of groundwater unless it has been shown that:

- i. The degradation will not unreasonably affect present and anticipated future beneficial uses,
- ii. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives,
- iii. The degradation is consistent with the maximum benefit of the people of the state, and
- iv. The discharger employs best practicable treatment or control (BPTC) to minimize the degradation.

Constituents of concern from this discharge that have the potential to cause degradation of high quality waters include, in part, organics, nutrients, and salts. To reduce the organic and nitrogen load of the discharge, the WWTF includes activated sludge basins with internal separate anoxic denitrification basins which is expected to prevent odor or nuisance conditions and preclude degradation from organic and nitrogen loading. For salinity, the discharge with an average EC of less than 600 umhos/cm is not anticipated to degrade groundwater such that it exceeds water quality objectives.

Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

The WWTF provides treatment and control of the discharge that incorporates:

- i. Disinfected tertiary wastewater treatment utilizing activated sludge, denitrification, and UV disinfection;
- ii. Application of treated water to the LAA at rates that will not exceed reasonable agronomic demand;
- iii. Sludge drying via a lined active solar dryer instead of unlined sludge drying beds;
- iv. Certified operators to ensure proper operation and maintenance; and

These treatment and control practices can be considered BPTC for the purposes of Resolution 68-16.

This Order establishes groundwater limitations that allow some degradation, but that will not reasonably threaten present and future anticipated beneficial uses of groundwater or results in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order requires monitoring to evaluate potential groundwater impacts from the discharge and confirm that the BPTC measures are sufficiently protective of groundwater. The discharge and the potential for groundwater degradation allowed in this Order is consistent with Resolution 68-16 since: (a) the limited degradation allowed by this Order will not unreasonably affect present and anticipated beneficial uses of groundwater, or result in water quality less

than water quality objectives, (b) the limited degradation is of maximum benefit to the people of the State, and (c) the Discharger will implement BPTC to minimize degradation.

**5. Stringency of Requirements for Individual Pollutants**

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD<sub>5</sub>, total suspended solids, and pH.

Water quality-based effluent limitations 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 water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless “applicable water quality standards for purposes of the CWA” pursuant to 40 C.F.R. section 131.21(c)(1).

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD<sub>5</sub>, TSS, BOD<sub>5</sub> and TSS removal, and pH 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.c of this Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 (see Order R5-2008-0027).

**Summary of Final Effluent Limitations  
 Discharge Point No. 002 (Hartley Slough)**

**Table F-17. Summary of Final Effluent Limitations**

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--	TTC
	lbs/day <sup>2</sup>	1,001	1,501	2,002	--	--	DC, TTC
	lbs/day <sup>3</sup>	1,334	2,002	2,669	--	--	DC, TTC
	lbs/day <sup>4</sup>	1,668	2,502	3,336	--	--	DC, TTC
Total Suspended Solids	mg/L	10	15	20	--	--	TTC
	lbs/day <sup>2</sup>	1,001	1,501	2,002	--	--	DC, TTC
	lbs/day <sup>3</sup>	1,334	2,002	2,669	--	--	DC, TTC
	lbs/day <sup>4</sup>	1,668	2,502	3,336	--	--	DC, TTC
pH	standard units	--	--	--	6.5	8.5	BP
Ammonia Nitrogen (as N)	mg/L	1.01	--	2.03	--	--	NAWQC

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--	MCL
Copper, Total Recoverable	ug/L	6.5	--	13.	--	--	CTR

<sup>1</sup> 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.  
 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 USEPA’s National Ambient Water Quality Criteria for the protection of freshwater aquatic life.  
 MCL – Based on the Primary Maximum Contaminant Level.

<sup>2</sup> Based on a design monthly average dry weather flow of 12.0 mgd (See Provision VI.C.6.a)

<sup>3</sup> Based on a design monthly average dry weather flow of 16.0 mgd (See Provision VI.C.6.a)

<sup>4</sup> Based on a design monthly average dry weather flow of 20.0 mgd (See Provision VI.C.6.a)

- a. **Percent Removal.** The average monthly percent removal of BOD 5-day @ 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 percent.
- b. **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;
  - ii. 90%, median for any three consecutive bioassays.
- c. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL as a 7-day median;
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/100 mL, at any time.
- d. **Average Dry Weather Flow.** The monthly average dry weather discharge flow shall not exceed 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification (see Provision VI.C.6.a).
- e. **Electrical Conductivity.** The 12-month rolling average electrical conductivity of the discharge shall not exceed the 12-month rolling average electrical conductivity of the source water plus 500 umhos/cm or a maximum of 1,000 umhos/cm, whichever is more stringent. When source water is from more than one source, the electrical conductivity shall be a flow-weighted average of all sources.
- f. **Chlorpyrifos and Diazinon.** Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of 1.0 as defined below:
  - i. Average Monthly Effluent Limitation

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

C<sub>D-avg</sub> = average monthly diazinon effluent concentration in ug/L.

$C_{C-avg}$  = average monthly chlorpyrifos effluent concentration in ug/L.

ii. Maximum Daily Effluent Limitation

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

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

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

**F. Interim Effluent Limits - Not Applicable**

**G. Land Discharge Specifications - Wildlife Management Area**

The Merced Wildlife Management Area (WMA) was created by the City of Merced many years ago as mitigation for loss of wetland caused by the establishment of the Land Application Area (LAA). The WMA is managed by the California Department of Fish and Wildlife to provide wetland habitat for migratory water fowl and other wildlife. The public is allowed limited access for hunting and other wetland related activities that include REC-1, REC-2, WARM, and WILD beneficial uses. The California Department of Public Health indicates the WMA meets the definition of a "restricted recreational impoundment" as defined in section 60301.760, article 1, chapter 3, title 22 of the California Code of Regulations. This Order requires the Discharger to submit a revised Title 22 Engineering Report that includes the discharge of treated effluent to the WMA. Treated effluent discharged to the WMA shall be at least "disinfected secondary-2.2 recycled water" as defined in section 60301.220, article 1, chapter 3, title 22 of the California Code of Regulations and comply with the following specifications to maintain the beneficial uses of the WMA.

- a. Total coliform organisms concentrations shall not exceed the following:
  - i. 2.2 MPN/100 mL as a 7-day median; and
  - ii. 23 MPN/100 mL, more than once in any 30-day period.
- b. Effluent shall be contained in the WMA.
- c. Recycled water shall be managed to conform to the requirements of title 22, division 4, chapter 3, California Code of Regulations.
- d. Objectionable odors related to the discharge shall not be perceived beyond the limits of the WMA.
- e. Public contact with recycled water shall be controlled through such means as fences or signs, or other acceptable alternatives. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4-inches high by 8-inches wide, that include the following wording:

"RECYCLED WATER - DO NOT DRINK  
AQUA DE DESPERDICIO RECLAMADA - NO TOME"

Each sign shall display an international symbol similar to that shown in Attachment J.

- f. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitos. More specifically,
  - i. Ditches not serving and wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation.

- ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitoes, shall not be used to store recycled water.
- g. There shall be no cross-connections between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the DPH, a reduced pressure principle backflow device.
- h. Ponds within the WMA shall be managed to maintain the integrity of pond embankments.
- i. The Discharger has the ability to discharge to the WMA and LAA simultaneously, but the entire flow is metered before it splits to the WMA or LAA. Accurate flow measurements and loading calculations to the WMA and LAA are not possible with the current meter location. Therefore, effluent shall not be discharged to the WMA and LAA simultaneously, unless the flow to each of these locations can be metered separately.

In addition, since the Facility provides a tertiary level of treatment, the following specifications are also required for treated effluent discharged to the WMA:

**Table F-18. Land Discharge Specifications**

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--

<sup>1</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).

<sup>2</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).

<sup>3</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- a. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 percent.
- b. **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;
  - ii. 90%, median for any three consecutive bioassays.

- c. **Electrical Conductivity.** The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500  $\mu\text{mhos/cm}$  or a maximum of 1,000  $\mu\text{mhos/cm}$ , whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.
- d. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.

**H. Recycled Water Specifications - Land Application Area**

The Discharger submitted a Title 22 Engineering Report for the discharge of recycled water to the LAA on 27 March 2006. The DPH conditionally approved the Title 22 Engineering Report in a letter dated 20 July 2006. The additional 90 acres of the abandoned ponds 5 & 6 added to the LAA will be covered in the revised Title 22 Engineering Report required by this Order. To protect public health and water quality, recycled water discharged to the LAA shall be at least "disinfected secondary-23 recycled water" as defined in Section 60301.225, article 1, chapter 3, title 22 of the California Code of Regulations and comply with the following specifications:

- a. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 23 most probable number (MPN) per 100 mL, as a 7-day median; and
  - ii. 240 MPN/100 mL, more than once in any 30-day period.
- b. Recycled water shall be contained within the Land Application Area at all times.
- c. Recycled water shall be managed to conform with the requirements of Title 22, Division 4, Chapter 3, California Code of Regulations.
- d. Objectionable odors related to the discharge shall not be perceivable beyond the limits of the Land Application Area at any time.
- e. Public contact with recycled water shall be controlled through such means as fences or signs, or other acceptable alternatives. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4-inches high by 8-inches wide that include the following wording:

"RECYCLED WATER - DO NOT DRINK  
AGUA DE DESPERDICIO RECLAMADA - NO TOME"

Each sign shall display the international symbol similar to that shown in Attachment J.

- f. The combined application of recycled water, biosolids, fertilizers and other soil amendments to the Land Application Area shall not exceed the nitrogen or hydraulic loading reasonably necessary to satisfy the nitrogen or water uptake needs of the Land Application Area considering the plant, soil, climate, and irrigation management system (i.e., generally accepted agronomic rates).
- g. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitos. More specifically:
  - i. Ditches not serving as wildlife habitat shall be maintained free from emergent, marginal, and floating vegetation.

- ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitos, shall not be used to store recycled water.
- h. Discharges to the LAA shall be managed to minimize erosion.
- i. There shall be no standing water in the Land Application Area 24 hours after recycled water is applied.
- j. The Discharger may not discharge recycled water to the Land Application Area during periods of measurable precipitation, or when soils within the Land Application Area are saturated.
- k. No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following are met:
  - i. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
  - ii. The well contains an annular seal that extends from the surface into the aquitard.
  - iii. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
  - iv. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
  - v. The owner of the well approves of the elimination of the buffer zone requirement.
- l. No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.
- m. No irrigation with, or impoundment of, disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.
- n. Workers shall be educated regarding hygienic procedures to ensure personal and public safety.
- o. There shall be no cross-connection between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the California Department of Public Health, a reduced pressure principle backflow device.
- p. The Discharger has the ability to discharge to the WMA and LAA simultaneously, but the entire flow is metered before it splits to the WMA or LAA. Accurate flow measurements and loading calculations to the WMA and LAA are not possible with the current meter location. Therefore, effluent shall not be discharged to the WMA and LAA simultaneously, unless the flow to each of these locations can be metered separately.

In addition, since the Facility provides a tertiary level of treatment, the following specifications are also required for treated effluent discharged to the LAA:

**Table F-19. Recycled Water Specifications**

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day <sup>1</sup>	1,001	1,501	2,002	--	--
	lbs/day <sup>2</sup>	1,334	2,002	2,669	--	--
	lbs/day <sup>3</sup>	1,668	2,502	3,336	--	--
Nitrate + Nitrite as Nitrogen	mg/L	10.	--	--	--	--

<sup>1</sup> Based on a design monthly average dry weather flow of 12.0 mgd (see Provision VI.C.6.a).

<sup>2</sup> Based on a design monthly average dry weather flow of 16.0 mgd (see Provision VI.C.6.a).

<sup>3</sup> Based on a design monthly average dry weather flow of 20.0 mgd (see Provision VI.C.6.a).

- a. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 90 percent.
- b. **Electrical Conductivity.** The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is more stringent. When source water is from more than once source, the EC shall be a flow-weighted average of all sources.
- c. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.

**V. RATIONALE FOR RECEIVING WATER LIMITATIONS**

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and 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 requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

**A. Surface Water**

- a. 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, toxicity, and turbidity. This Order contains receiving water quality objectives for temperature based on the Discharger’s December 2011, *Hartley Slough Temperature Study* and comments received from the California Department of Fish and Wildlife regarding the temperature study.

**B. Groundwater**

- a. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
- b. 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.

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 (VI.C.1.c).** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **Whole Effluent Toxicity (VI.C.1.d).** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through 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 a numeric chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.
- c. **Water Effects Ratio (WER) and Metal Translators (VI.C.1.e).** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant 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.
- d. **Ultraviolet (UV) Disinfection Operating Specifications (VI.C.1.h).** 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 in this Order are based on the Discharger's February 2011 *Field Commissioning Test Report*. If the Discharger conducts another site-specific UV Engineering study that identifies different UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the UV specifications.

### 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 May 2011 through August 2013, 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 quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, Special Provision VI.C.2.a includes a numeric toxicity

monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated. The Discharger submitted a TRE Work Plan in June 2008.

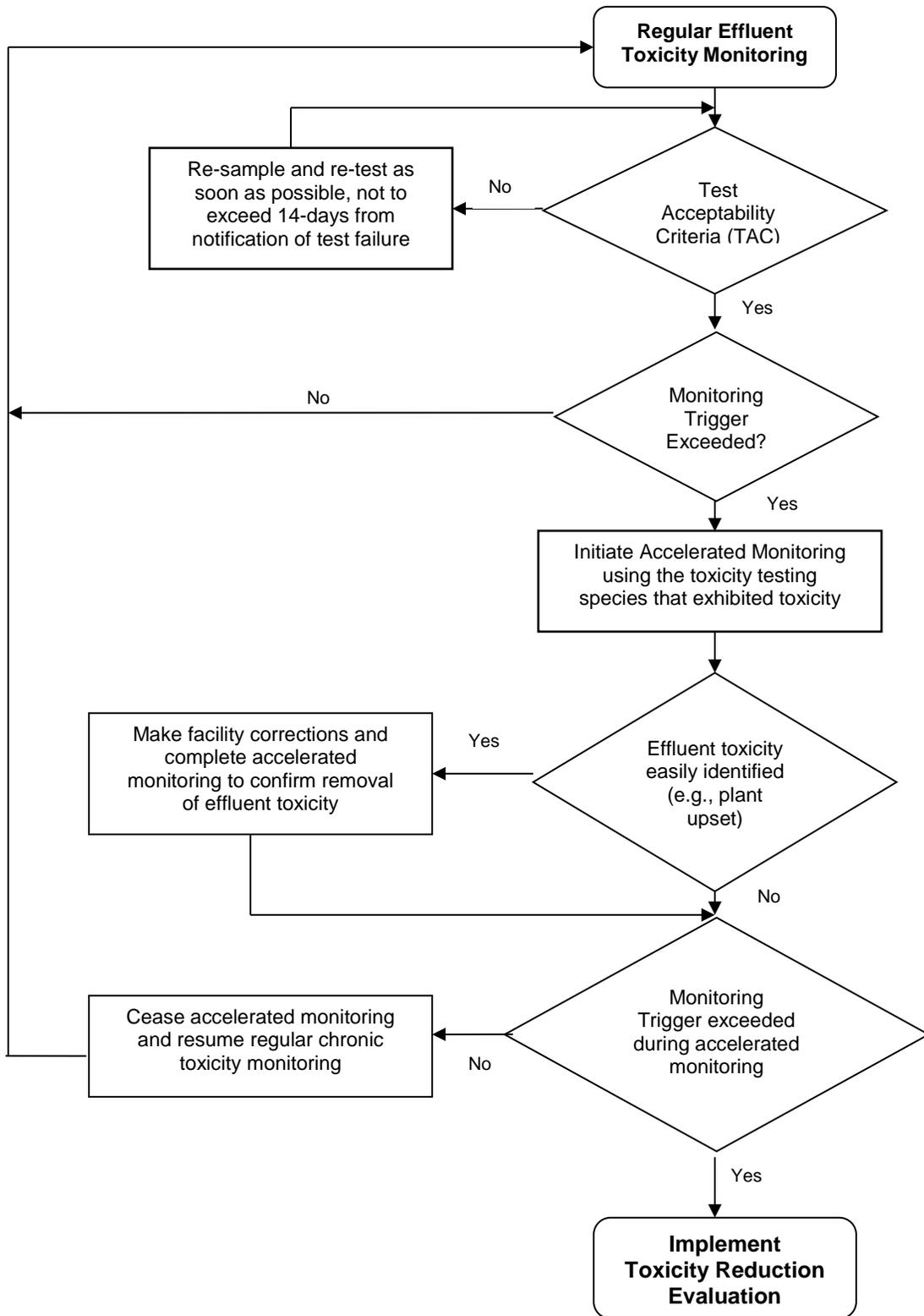
**Monitoring Trigger.** A numeric toxicity monitoring trigger of  $> 1$  TUc (where  $TUc = 100/NOEC$ ) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

**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.

**Figure F-1**  
**WET Accelerated Monitoring Flow Chart**



- b. **Groundwater Monitoring.** The Discharger is required to monitor groundwater to determine the following:
    - i. Compliance with groundwater limitations contained in section V.B of this Order;
    - ii. Spatial extent of groundwater affected by, and that could be affected by, the discharge;

By **<Within 36 months following adoption of this Order>**, the Discharger is required to submit a technical report describing how items i and ii above were determined.
  - c. **Best Practical Treatment or Control (BPTC).** If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, by **<within 48 months following adoption of this Order>**, a BPTC Evaluation Work Plan. This work plan shall set forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the Facility's waste management system to determine best practicable treatment or control for each of the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.
3. **Best Management Practices and Pollution Prevention - Not Applicable**
4. **Construction, Operation, and Maintenance Specifications**
- a. **Turbidity 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 utilized at this Facility is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (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. The operational specifications for turbidity included in this Order are specified in Title 22, CCR, section 60301.320 and 60304.
  - b. **Filtration Rate.** This Order includes a maximum filtration rate of 5 gpm/ft<sup>2</sup> to ensure that wastewater to be recycled or discharged to Hartley Slough is properly filtered. The filtration rate included in this Order is specified in Title 22, CCR, section 60301.320(a)(1).
  - c. **Ultraviolet (UV) Disinfection System Operating Specifications.** This Order requires that wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. 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 Second Edition dated May 2003 (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 the 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 offices recommended that provisions be included in permits for water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency of lamp sleeves, as well as, include provisions that specify minimum delivered UV dose that must be maintained (per the NWRI Guidelines).

The Discharger submitted a Field Commissioning Test Report dated February 2011 that demonstrates the UV system is equivalent to a Title 22 approved UV system. The Test Report also demonstrates that during validation testing a minimum hourly average UV dose of 118 mJ/cm<sup>2</sup> with a minimum UV transmittance of 56% will achieve the virus inactivation required by Title 22 for Disinfected Tertiary Recycled Water. Therefore, in lieu of the UV dose and transmittance requirements of the NWRI Guidelines, this Order includes an operating specification for a minimum hourly average UV dosage of 118 mJ/cm<sup>2</sup> and a UV transmittance of 56%, in accordance with the site-specific validation testing.

## **5. Special Provisions for Municipal Facilities (POTWs Only)**

### **a. Pretreatment Requirements.**

- i. The federal CWA section 307(b), and federal regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.
- ii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Resources Control Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

- b. The State Water Resources Control Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on May 2, 2006. The Monitoring and Reporting Requirements for the General Order were amended by Water Quality Order WQ 2008-0002-EXEC on February 20, 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 enrolled under the General Order in July 2006.

## 6. Other Special Provisions

- a. **Increase in Permitted Flow Rate.** For authorization to discharge tertiary effluent in excess of 12.0 mgd, the Discharger must: (1) submit certification from a California-registered civil engineer with experience in the design and operation of wastewater treatment facilities that the Facility is capable of meeting discharge limitations and has adequate capacity to treat and dispose of these flow in compliance with this Order, (2) provide evidence demonstrating that the California Environmental Quality Act requirements have been satisfied, and (3) obtain the written concurrence from the Executive Officer. This provision is carried over from the previous Order.
- b. **Title 22 Engineering Report.** Section 60323 of Title 22 requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards. The Discharger submitted a Title 22 Engineering Report in March 2006 that details the use of recycled water at the LAA. The report was conditionally approved by DPH in July 2006. However, since the hunters can and do have contact with the water within the WMA, DPH has indicated that a revised Title 22 Engineering Report is required that details the use of recycled water at the WMA. The revised Title 22 Engineering Report shall also cover the additional 90 acres from abandoned ponds 5 & 6 added to the LAA.
- c. Title 22 of the California Code of Regulations requires disinfected tertiary recycled water to be oxidized, coagulated (in some instances), filtered, and adequately disinfected.

## 7. Compliance Schedules - Not Applicable

## 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<sub>5</sub> and TSS reduction requirements). The monitoring frequencies for pH (1/day), and BOD<sub>5</sub> and TSS (3/week) have been retained from Order No. R5-2008-0027.

### B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow (continuous); pH and total coliform organisms (1/day); and nitrite + nitrate as nitrogen, BOD<sub>5</sub>, and TSS (3/week), have been retained from Order No. R5-2008-0027 to determine compliance with effluent limitations for these parameters.
3. Effluent monitoring frequencies and sample types for temperature (1/day), total nitrogen (3/week), and standard minerals (1/quarter), have been retained from Order No. R5-2008-0027 to determine the effectiveness of the treatment process. Effluent monitoring frequencies and sample types for priority pollutants (2/year), have been retained from Order No. R5-2008-0027 in order to collect sufficient data to conduct a reasonable potential analysis for permit renewal.
4. Effluent monitoring for chlorpyrifos and diazinon (1/quarter) has been included in this Order to determine compliance with the effluent limitations and the Basin Plan waste load allocations.
5. Effluent monitoring sample type for copper has been retained from Order No. R5-2008-0027; however, the frequency has been increased from 2/year to 1/quarter since reasonable potential exists for copper to cause, or contribute to, an excursion above a numeric water quality objective and effluent limitations have been established for copper in this Order.
6. Effluent monitoring sample type for ammonia as nitrogen has been retained from Order No. R5-2008-0027; however, data collected for this constituent indicate the sampling frequency can be relaxed. Data indicate the monitoring frequency for electrical conductivity can be relaxed too. Therefore, ammonia as nitrogen sample frequency decreased from 1/day in Order No. R5-2008-0027 to 3/week in this Order. Electrical conductivity sample frequency decreased from 1/day in Order No. R5-2008-0027 to 5/week in this Order.
7. Monitoring data collected over the previous permit term for oil and grease, settleable solids, total residual chlorine, aluminum, chloroform, dibromochloromethane, dichlorobromomethane, cyanide, iron, and lead did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order No. R5-2008-0027.

#### **C. Whole Effluent Toxicity Testing Requirements**

1. **Acute Toxicity.** Bimonthly 96-hour bioassay testing was required in Order No. R5-2008-0027. However, acute toxicity data indicates bimonthly sample frequency is excessive. Therefore, this Order requires monthly 96-hour bioassay testing to demonstrate compliance with the effluent limitation for acute toxicity
2. **Chronic Toxicity.** 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.

##### **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. 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 indicate 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.b 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 and to determine compliance with effluent limitations, land discharge specifications, and recycled water specifications.

**3. Filtration System Monitoring**

Filter system monitoring and reporting are required to ensure that the filtration system is operated to adequately clarify the waste stream so that the UV disinfection system can be effective. Filtration system monitoring is imposed to achieve equivalency to requirements established by the California Department of Public Health (DPH).

**4. UV Disinfection System Monitoring**

UV system monitoring and reporting are required to ensure that the UV system is operated to adequately inactivate pathogens in the wastewater. UV Disinfection system monitoring is imposed to achieve equivalency to requirements established by the California Department of Public Health (DPH), and the National Water Research Institute (NWRI), and American Water Works Association Research Foundation NWRI/AWWARF's *"Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse."*

**5. Wildlife Management Area Monitoring**

Wildlife Management Area monitoring is required to ensure the discharge to the Wildlife Management Area complies with the Land Discharge Specifications in section IV.B.1 of this Order.

**6. Land Application Area Monitoring**

Land Application Area monitoring is required to ensure that the discharge to the Land Application Area complies with the Recycled Water Specifications in section IV.C.1 of this Order.

**VIII. PUBLIC PARTICIPATION**

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Merced Wastewater Treatment Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

**A. Notification of Interested Parties**

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the following **<Describe Notification Process (e.g., newspaper name and date)>**

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

[http://www.swrcb.ca.gov/centralvalley/board\\_info/meetings/#2014](http://www.swrcb.ca.gov/centralvalley/board_info/meetings/#2014)

**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 Officer at the Central Valley Water Board at 1685 E Street, Fresno, CA 93706.

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 <Date>.

**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: 7/8 August 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 Resources Control 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 Resources Control 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](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 1685 E Street, Fresno, CA 93706 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 (559) 445-5116.

**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 Scott Hatton at (559) 444-2502.

**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	ug/L	260	NA	750	750	750	NA	NA	NA	200	No <sup>(1)</sup>
Ammonia as N	mg/L	<0.05	2.27	1.93	2.03	1.93	NA	NA	NA	NA	Yes <sup>(2)</sup>
Copper	ug/L	2.9	5.7	8.9 <sup>(3)</sup> /1.6 <sup>(4)</sup>	13.2 <sup>(3)</sup> /2.1 <sup>(4)</sup>	8.9 <sup>(3)</sup> /1.6 <sup>(4)</sup>	1,300	NA	NA	1,000	Yes
Cyanide	ug/L	3.2 DNQ	<1.0	5.2	22	5.2	700	220000	NA	150	No
Dibromochloromethane	ug/L	<0.16	<0.16	0.41	NA	NA	0.41	34	NA	80	No
Dichlorobromomethane	ug/L	<0.16	<0.16	0.56	NA	NA	0.56	46	NA	80	No
Iron	ug/L	32	NA	300	NA	1,000	NA	NA	NA	300	No
Nitrite + Nitrate as N	mg/L	18	NA	10	NA	NA	10	NA	NA	10	Yes <sup>(2)</sup>
Total Residual Chlorine	mg/L	<0.01	NA	0.011	0.019	0.011	NA	NA	NA	NA	No

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

DNQ = Detected but not quantified

Footnotes:

- (1) Reasonable potential does not exist for aluminum. The CCC of 87 ug/L is not applicable since the downstream hardness and pH in Hartley Slough are not constant with the study where this CCC was established. In addition, the highest annual average effluent aluminum concentration of 89 ug/L is less than the Recommended Secondary MCL of 200 ug/L.
- (2) Reasonable potential established due to the nature of the discharge.
- (3) Based on lowest observed effluent hardness of 94 mg/L.
- (4) Based on lowest observed upstream receiving water hardness of 13 mg/L.

**ATTACHMENT H – CALCULATION OF WQBELS**

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations				Aquatic Life Calculations							Final Effluent Limitations		
		HH	CMC	CCC	HH	CMC	CCC	ECA <sub>HH</sub> = AMEL/HH	AMEL/MDEL	Multiplier <sub>HH</sub>	MDEL <sub>HH</sub>	ECA Multiplier <sub>acute</sub>	LTA <sub>acute</sub>	ECA Multiplier <sub>chronic</sub>	LTA <sub>chronic</sub>	Lowest LTA	AMEL Multiplier <sub>95</sub>	AMEL <sub>AL</sub>	MDEL Multiplier <sub>99</sub>	MDEL <sub>AL</sub>	Lowest AMEL
Ammonia as N	mg/L	-	2.03	1.93							0.32	0.7	0.78	1.51	0.7	1.55	1.01	3.11	2.03	1.01	2.03
Copper, Total Recoverable	ug/L	-	13	8.8	-	-	-	-	-	-	0.32	4.2	0.53	4.6	4.2	1.55	6.5	3.11	13.0	6.5	13.0
Chlorpyrifos <sup>1</sup>	ug/L	-	0.025 <sup>2</sup>	0.015 <sup>2</sup>	-	-	-	-	-	-	0.321	0.0080	0.527	0.0079	0.0079	1.55	0.012	3.11	0.025	0.012	0.025
Diazinon <sup>1</sup>	ug/L	-	0.16 <sup>2</sup>	0.10 <sup>2</sup>	-	-	-	-	-	-	0.321	0.051	0.527	0.053	0.051	1.55	0.079	3.11	0.016	0.079	0.016

<sup>1</sup> The calculated AMEL and MDEL for chlorpyrifos and diazinon were used to determine effluent limitations consistent with the TMDL waste load allocation.

<sup>2</sup> Basin Plan water quality objectives.

**ATTACHMENT I – PRIORITY POLLUTANTS AND OTHER CONSTITUENTS OF CONCERN**

Parameter	Units	Effluent Sample Type	Maximum Reporting Level <sup>1</sup> (ug/L or as noted)
2- Chloroethyl vinyl ether	µg/L	Grab	1
Chloroform	µg/L	Grab	2
Chloromethane	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
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	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2

Parameter	Units	Effluent Sample Type	Maximum Reporting Level <sup>1</sup> (ug/L or as noted)
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate	µg/L	Grab <sup>2</sup>	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum <sup>3</sup>	µg/L	24-hr Composite	
Antimony	µg/L	24-hr Composite	5
Arsenic	µg/L	24-hr Composite	10
Asbestos	MFL <sup>4</sup>	24-hr Composite	
Barium	µg/L	24-hr Composite	
Beryllium	µg/L	24-hr Composite	2
Cadmium	µg/L	24-hr Composite	0.5
Chromium (III)	µg/L	24-hr Composite	50
Chromium (VI)	µg/L	24-hr Composite	10
Copper	µg/L	24-hr Composite	0.5
Cyanide	µg/L	24-hr Composite	5
Fluoride	µg/L	24-hr Composite	
Iron <sup>6</sup>	µg/L	24-hr Composite	
Lead	µg/L	24-hr Composite	0.5
Mercury	ng/L	Grab <sup>5</sup>	0.5 ng/L
Manganese <sup>6</sup>	µg/L	24-hr Composite	
Molybdenum	µg/L	24-hr Composite	
Nickel	µg/L	24-hr Composite	20
Selenium	µg/L	24-hr Composite	5
Silver	µg/L	24-hr Composite	0.25

Parameter	Units	Effluent Sample Type	Maximum Reporting Level <sup>1</sup> (ug/L or as noted)
Thallium	µg/L	24-hr Composite	1
Tributyltin	µg/L	24-hr Composite	
Zinc	µg/L	24-hr Composite	20
4,4'-DDD	µg/L	24-hr Composite	0.05
4,4'-DDE	µg/L	24-hr Composite	0.05
4,4'-DDT	µg/L	24-hr Composite	0.01
alpha-Endosulfan	µg/L	24-hr Composite	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite	0.01
Alachlor	µg/L	24-hr Composite	
Aldrin	µg/L	24-hr Composite	0.005
beta-Endosulfan	µg/L	24-hr Composite	0.01
beta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Chlordane	µg/L	24-hr Composite	0.1
delta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Dieldrin	µg/L	24-hr Composite	0.01
Endosulfan sulfate	µg/L	24-hr Composite	0.01
Endrin	µg/L	24-hr Composite	0.01
Endrin Aldehyde	µg/L	24-hr Composite	0.01
Heptachlor	µg/L	24-hr Composite	0.01
Heptachlor Epoxide	µg/L	24-hr Composite	0.02
Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite	0.5
PCB-1016	µg/L	24-hr Composite	0.5
PCB-1221	µg/L	24-hr Composite	0.5
PCB-1232	µg/L	24-hr Composite	0.5
PCB-1242	µg/L	24-hr Composite	0.5
PCB-1248	µg/L	24-hr Composite	0.5
PCB-1254	µg/L	24-hr Composite	0.5
PCB-1260	µg/L	24-hr Composite	0.5
Toxaphene	µg/L	24-hr Composite	
Atrazine	µg/L	24-hr Composite	
Bentazon	µg/L	24-hr Composite	
Carbofuran	µg/L	24-hr Composite	
2,4-D	µg/L	24-hr Composite	
Dalapon	µg/L	24-hr Composite	
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	24-hr Composite	
Di(2-ethylhexyl)adipate	µg/L	24-hr Composite	
Dinoseb	µg/L	24-hr Composite	
Diquat	µg/L	24-hr Composite	
Endothal	µg/L	24-hr Composite	
Ethylene Dibromide	µg/L	24-hr Composite	
Glyphosate	µg/L	24-hr Composite	
Methoxychlor	µg/L	24-hr Composite	
Molinate (Ordram)	µg/L	24-hr Composite	
Oxamyl	µg/L	24-hr Composite	

Parameter	Units	Effluent Sample Type	Maximum Reporting Level <sup>1</sup> (ug/L or as noted)
Picloram	µg/L	24-hr Composite	
Simazine (Princep)	µg/L	24-hr Composite	
Thiobencarb	µg/L	24-hr Composite	
2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite	
2,4,5-TP (Silvex)	µg/L	24-hr Composite	
Diazinon	µg/L	24-hr Composite	
Chlorpyrifos	µg/L	24-hr Composite	
Boron <sup>6</sup>	µg/L	24-hr Composite	
Chloride <sup>6</sup>	mg/L	24-hr Composite	
Hardness (as CaCO <sub>3</sub> )	mg/L	Grab	
Foaming Agents (MBAS)	µg/L	24-hr Composite	
Mercury, Methyl	ng/L	Grab <sup>5</sup>	
Nitrate (as N) <sup>6</sup>	mg/L	24-hr Composite	
Nitrite (as N) <sup>6</sup>	mg/L	24-hr Composite	
pH	Std Units	Grab	
Phosphorus, Total (as P) <sup>6</sup>	mg/L	24-hr Composite	
Sulfate <sup>6</sup>	mg/L	24-hr Composite	
Temperature	°C	Grab	
Total Dissolved Solids (TDS)	mg/L	24-hr Composite	

<sup>1</sup> 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.

<sup>2</sup> In order to verify if bis(2-ethylhexyl) phthalate is truly present in the sample, the Discharger shall take steps to ensure the sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

<sup>3</sup> Monitoring for aluminum shall be conducted using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

<sup>4</sup> MFL = million fibers per liter.

<sup>5</sup> Mercury and methyl mercury samples shall be grab samples taken using the 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 1631 (Revision E).

<sup>6</sup> Monitoring only required at R-002U1, not M-001.

**ATTACHMENT J – RECYCLED WATER SIGNAGE**

